

STATE OF MICHIGAN
 DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS
 PROCUREMENT
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 OR
 611 W. OTTAWA, LANSING, MI 48933

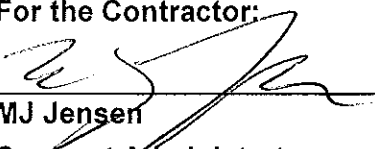
NOTICE OF CONTRACT NO. 641R5501009
 between
THE STATE OF MICHIGAN
 and

NAME & ADDRESS OF CONTRACTOR	PRIMARY CONTACT	EMAIL
Synapse Energy Economics, Inc. 485 Massachusetts Avenue, Suite 2 Cambridge, MA 02139	MJ Jensen	mjjensen@synapse-energy.com
	PHONE	VENDOR TAX ID # (LAST FOUR DIGITS ONLY)
	(617) 453-7030	6408

STATE CONTACTS	AGENCY	NAME	PHONE	EMAIL
PROGRAM MANAGER	LARA	Steve Kulesia	517-284-8244	kulesias@michigan.gov
CONTRACT ADMINISTRATOR	LARA	Shay Gaffey	517-335-1971	gaffey@s@michigan.gov

CONTRACT SUMMARY			
DESCRIPTION:			
MPSC/MDEQ EPA 111(d) Impact Analysis			
INITIAL TERM	EFFECTIVE DATE	INITIAL EXPIRATION DATE	AVAILABLE OPTIONS
4 Months	09/01/2015	01/01/2016	1 Year
PAYMENT TERMS	F.O.B.	SHIPPED TO	
NET 30 DAYS			
ALTERNATE PAYMENT OPTIONS			EXTENDED PURCHASING
<input type="checkbox"/> P-card <input type="checkbox"/> Direct Voucher (DV) <input type="checkbox"/> Other			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
MINIMUM DELIVERY REQUIREMENTS:			
N/A			
MISCELLANEOUS INFORMATION:			
ESTIMATED CONTRACT VALUE AT TIME OF EXECUTION:			\$245,860.00

For the Contractor:



MJ Jensen

Contract Administrator

Synapse Energy Economics, Inc.

8/27/2015

Date

For the State:



LeAnn Droste, Procurement Services Director

Department of Licensing and Regulatory Affairs

State of Michigan

8/26/15

Date

STATE OF MICHIGAN

Request For Proposal No. 641R5501009
MPSC/MDEQ EPA 111(d) Impact Analysis

EXHIBIT A STATEMENT OF WORK CONTRACT ACTIVITIES

This contract is for expert consultant advisory services to perform an analysis of the U.S. Environmental Protection Agency's (EPA) final rule for existing fossil fuel electric generation units (EGU) under Section 111(d) of the federal Clean Air Act (CAA), and provide an economic impact analysis of the rule on the State of Michigan through 2035. This final rule is expected to be released in mid-summer 2015.

At a minimum, the work to be performed will include modeling and analysis under various scenarios as identified by the MPSC/DEQ. Additionally, the outputs of this analysis will include an estimate of the monetary impact to the State of Michigan of the final 111(d) rule, under each compliance scenario modeled.

Background

In June 2014, EPA issued its proposed "Clean Power Plan" under Section 111(d) of the CAA to address greenhouse gas emissions (CO₂) from fossil fuel-fired EGU's. As such, the State of Michigan must develop and submit a plan to the EPA by June 2016 that demonstrates the state is capable of achieving carbon reductions across the electric utility sector.

The contract is for the Michigan Public Service Commission (MPSC) to aid in the development of a strategy for complying with the EPA's 111(d) rule. The modeling work to be performed by the contractor will also inform the Office of the Governor and his designees of the cost and effects of various compliance options, and these officials' input and opinions will be important in developing a State Plan for EPA's final rule under Section 111(d) of the CAA.

The contractor will undergo modeling of various scenarios applicable to potential strategies for the State of Michigan in meeting CO₂ reduction targets as identified by EPA. The various scenarios will be developed by the Contractor, with input and guidance from the MPSC and Michigan Department of Environmental Quality (DEQ). The contractor will also study economic and environmental co-benefits related to the various compliance options studied to meet the final Section 111(d) rule.

The EPA web link for the Clean Power Plan is available at;

<http://www2.epa.gov/carbon-pollution-standards>

Scope of Work and Deliverables

In Scope

1. Contractor will perform a policy/economic impact analysis of the final Section 111(d) rule on Michigan's electric utility sector.

Please provide a detailed description of the modeling software package to be used in performing this analysis, as well as all data sources and other inputs utilized by the bidder.

Under the Clean Power Plan (CPP), states must generate State Plan performance demonstrations. These demonstrations must show that either unit-specific emissions limitations or a combination of various state policies and regulations will meet EPA's CO₂ emissions reductions targets on a mass or rate basis. The structure of the required demonstrations are left open under the proposed rule, although in accompanying technical support documents, EPA discusses both various modeling and non-

modeling approaches to constructing a demonstration, potentially spanning the gamut from the Eastern Regional Technical Advisory Committee (ERTAC) "EGU Forecast Tool" to electric sector capacity expansion and dispatch models.

Synapse proposes to support Michigan's state planning process with the use of an industry-standard capacity expansion model, System Optimizer from ABB (formerly Ventyx). System Optimizer is a linear program solver with a high level of detail, able to optimize specific electric generating unit (EGU) build and retire decisions, cost-effective energy efficiency, unit retrofit decisions (such as heat rate improvements), emissions trading programs, and mass-based emissions targets. The System Optimizer data structure can also be used to drive detailed hourly unit-commitment dispatch modeling using the PROSYM engine, or evaluate stochastic uncertainty using the Planning and Risk (PaR) module. The System Optimizer model is used for Integrated Resource Planning (IRP) and discrete resource decisions by some of the largest and most complex multi-state utilities, including PacifiCorp, Duke, and TVA.

Using a detailed and industry-standard electric sector optimization model to evaluate CPP compliance ensures that resulting vetted plans are both acceptable to EPA's standard of review and reach a certain level of buy-in by the Michigan electric sector. The model's flexible and expansive structure means that it can be used both to generate initial plans for stakeholder review, as well as incorporate utility feedback and evaluate regional compliance options as other states' pathways become clear. System Optimizer has withstood utility regulatory scrutiny in multiple states.

Synapse will develop Michigan-specific inputs to the System Optimizer model in collaboration with the MPSC, MDEQ, planners from Michigan utilities, and local consumer, industry, and stakeholder groups, as well as from independent research. However, to expedite the modeling process, Synapse proposes to acquire the System Optimizer model with pre-packaged datasets, including near-term base data, populated with detailed EGU specifications, costs and constraints from Velocity Suite (a comprehensive market intelligence report).

The base data provides useful starting points for analysis, but are neither specific to Michigan concerns, nor necessarily appropriate for modeling compliance under the CPP. To that end, Synapse proposes to engage in research through local expert groups to develop specific reference forecasts and eligible measures for CPP compliance.

2. Contractor will analyze various compliance scenarios to meet final Section 111(d) emissions targets. Contractor should follow the EPA's "building block" approach for at least one scenario. Contractor will perform separate analyses for both a rate-based and mass-based compliance approaches for meeting the targets outlined in Section 111(d). Contractor should be aware that Michigan's final emissions targets may be different than its proposed emission targets of 1,227 lbs of CO₂ / net MWh (interim goal) and 1,161 lbs of CO₂ / net MWh (final goal). Results should be based on the following inputs:

1. CO₂ price assumption, including a state-specific CO₂ price assumption
2. Generation technology costs and fuel price forecasts
3. Load and demand growth forecasts for state
4. Percentage of generation by fuel type in state in 2012
5. CO₂ emissions (tons) and emission rates (lbs/MWh) for state in 2012.

The initial scenarios for compliance will be analyzed for both a rate and mass based emission target, as dictated by the final Section 111(d) rule. Until the results of the initial modeling run are complete, the MPSC/DEQ cannot provide a detailed description of each compliance scenario to be modeled in each subsequent run. Based upon the results of the initial modeling run, subsequent scenarios shall be ran in efforts to provide the MPSC/DEQ with adequate data in selecting the optimal compliance scenario. The results of these analyses will aid the State of Michigan in drafting its State Plan to comply with the final Section 111(d) rule.

Please explain the approach to be used to develop the compliance scenarios and include a detailed description of each.

Defining and refining reasonable input assumptions is a core element of this project, and will begin even prior to acquiring the licensure for the System Optimizer model. We break the inputs into the following key categories: (1) demand forecast, (2) price forecasts for fuel, emissions, and wholesale energy, (3) energy efficiency and renewable energy cost and potential, (3) EGU specific inputs, (4) existing and expected federal and Michigan-specific regulations and policies, and (5) scoring metrics for the compliance plans. Each of the input elements, their data sources and basis, are described below.

Demand forecast: Synapse will work with MPSC to collect and compare energy and peak demand forecasts from Michigan utility resource plans (DTE, Consumers, Wolverine and public power entities as available), state-specific studies, regional coordinators (i.e. MISO), and national entities (e.g. EIA and NERC) to determine a range of reasonable baseline demand forecasts. We will harness our extensive work in understanding the role of existing demand-side management programs in long-term forecasts to ensure that the forecasts are clear about the expected role of "on-the-books" efficiency programs, and are likely to meet transparency requirements for State Plans. We expect to provide a base demand forecast as well as a range of uncertainty.

Price forecasts: Synapse will utilize publicly available fuel price forecasts for coal, natural gas, and fuel oil (e.g. EIA Annual Energy Outlook, NYMEX), adjusted as necessary to accommodate known long-term fixed price contracts, basis adders, and recent mine-specific coal costs. To the extent that Michigan utilities are willing and able to disclose fuel contracts, such contracts will be incorporated into input assessments. Carbon price forecasts will be developed both through general market research, and developed directly within the System Optimizer modeling framework, for different purposes. Synapse maintains a publicly available CO2 price forecast for utility planning purposes (<http://www.synapse-energy.com/project/synapse-carbon-dioxide-price-forecast>); this forecast is likely to be updated after the release of the final rule, and to the extent appropriate and available, could be incorporated into Michigan planning. Separately, Synapse expects to assess a mass-based "hard cap" compliance strategy, in which a "shadow price" for CO2 would be developed within the System Optimizer model. Finally, to the extent that MPSC/MDEQ expects to assess rate-based trading, Synapse will work with staff to develop an appropriate modeling mechanism and price to capture rate-based treatment. For CO2 pricing, we expect to provide a base forecast as well as a range of uncertainty.

Energy efficiency / renewable energy cost and potential: Synapse will develop energy efficiency and renewable energy cost and potential estimates for use in the State Plan development. Reviewing state- and utility specific potential studies (i.e. the MPSC potential study from November 2013), as well as historical program achievements by the program administrators in Michigan and in other leading jurisdictions, we will structure a range of estimates for near-term energy efficiency resource availability and cost. For long-term potential during the State Plan period (i.e. 2020-2030), Synapse will assess various potential studies including the MPSC potential study and other studies on long-term energy efficiency potential, and determine a reasonable penetration rate and cost curve while working closely with staff. Synapse developed a long-term efficiency cost and penetration tool for EPA's proposed 111(d) GHG Abatement Measures Technical Support Document (see <http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-ghg-abatement-measures>) and will harness that analysis framework to support the Michigan assessment. We expect to provide a base penetration for energy efficiency, as well as a range of uncertainty. For renewable energy potential, Synapse will primarily rely on up-to-date state-specific studies such as the MPSC assessment from April 2015. To the extent that this study requires supplement, Synapse can use specific cost and potential criteria from

the National Renewable Energy Laboratory (NREL) in the Renewable Energy Deployment System (ReEDS) model.

EGU specific inputs: Modeling 111(d) Clean Power Plan compliance is likely to require assessments of individual affected sources (i.e. existing units), and further require differentiation between the actions of affected sources and non-affected sources. To that end, and to improve the accuracy of the System Optimizer model, Synapse will assess unit-specific inputs and assumptions as used in the model platform. Synapse expects to acquire the System Optimizer capacity expansion model and reference case data for the Eastern Interconnect, which includes EGU-specific parameterizations. However, we expect to vet these assumptions against public data and, as available, utility information. We will vet and calibrate the following variables for each affected source: capacity, heat rate, fuel source, CO2 emissions rate, variable and fixed operations and maintenance, and outage rates. Various forms from EIA, EPA's Air Quality Markets Dataset (AQMD), and FERC will allow these calibrations. We will also coordinate with MDEQ to ensure that other applicable permit conditions are not exceeded by the model.

Scoring metrics: State Plan modeling bears a similarity to integrated resource planning (IRP), except that states may choose to assess the value of various compliance options through metrics other than least cost. To the extent that Michigan plans to assess economic and environmental co-benefits in compliance planning, we expect that the state may opt to evaluate multiple simultaneous criteria. As such, Synapse believes that it is critical to establish plan scoring metrics before embarking on compliance planning to ensure that the method of scoring is not used to bias the selection of a result. We will work closely with MPSC/MDEQ staff to establish a reasonable and transparent scoring mechanism at the forefront of this assessment.

Synapse proposes to break compliance planning into four distinct steps, each followed by a review phase with MPSC/MDEQ. The steps include: (1) Compliance strategy design; (2) Reference case modeling; (3) Draft compliance case modeling; and (4) Final compliance case modeling. Each of these steps are structured to ensure that staff and stakeholders are in general agreement with regards to the basis of the compliance modeling. The compliance strategy design stage is described below. Detailed modeling assessment stages are described later.

Compliance Strategy Design. Synapse has extensive expertise in providing states and utilities with flexible and innovative mechanisms of reducing emissions from existing generation sources, including through the use of demand-side management programs, low emissions resources, harnessing combined heat and power opportunities, the relief of transmission constraints, and market-based trading programs. In this step, we will assess a wide variety of measures for direct and indirect emissions controls, starting with EPA's assumed BSER building blocks from the final rule (assuming such blocks continue to exist), and exploring efforts designed to produce least-cost compliance on a mass basis, as well as a rate basis. To expedite this process, Synapse proposes to harness the Clean Power Plan Planning Tool (CP3T), a high-level screening tool developed by key staff in this project. CP3T allows Synapse to review a large number of compliance options rapidly in an open and accessible analysis framework.

Synapse expects to produce at least six different draft compliance pathways through CP3T, incorporating (at a minimum) EPA's building blocks, traditional market-based trading for mass reductions, and deeper penetrations of efficiency and/or renewable energy than assumed in BSER. In consultation with MPSC/MDEQ, Synapse may design some pathways that are compliant on a state average rate-basis and others that are compliant on a mass basis, as available in the final rule. To the extent that the final rule allows for other forms of compliance (e.g. flat emissions rates by fuel type), Synapse will work with MPSC to determine if modeling alternative compliance pathways is appropriate. Synapse will conduct sensitivities on these compliance pathways based on different levels of peak and energy demand growth, energy efficiency attainment, and economic retirements.

3. Contractor will include up to four (4) modeling runs, using up to six (6) scenarios each, applying various sensitivities as instructed by the Michigan Public Service Commission staff. The MPSC will provide data where appropriate, such as Michigan-specific data; however the Contractor will be expected to supply all other necessary data needed for this project. Contractor will provide all data sources and inputs used in their modeling software. In addition, the results obtained from the modeling done under this contract may be used by the State of Michigan in the development of a State Plan for 111(d). Results should show the effect the scenarios have on the following parameters:
 1. Retail electricity price (by customer class)
 2. MISO and PJM energy market prices
 3. Percentage of generation by fuel type in state after 2030
 4. CO2 emissions (tons) and emission rates (lbs/MWh) for state after 2030
 5. Section 111(d) compliance costs for the state (broken down by rate class).

Please provide a detailed description of the approach to be used for developing the four (4) modeling runs. Include data sources to be used and other inputs provided by the bidder.

As noted above, Synapse proposes three sequential modeling steps: Reference case modeling, draft compliance case modeling, and final compliance case modeling.

Reference Case Modeling. Based on parallel detailed guidance for incorporating energy efficiency and renewable energy into air quality State Implementation Plans (SIPs) as referenced in the CPP State Plan Technical Support Document, Synapse expects that a reasonable compliance demonstration will require a Reference Case assessment, in which states show the expected compliance implications of existing on-the-books regulations prior to assessing incremental compliance measures. We interpret this to mean that the purpose of a Reference Case is to both inform EPA's assessors of the reasonableness of the demonstration, as well as to show which incremental compliance measures are necessary beyond baseline expectations. In addition, EPA may require some components of a baseline assessment to be characterized as enforceable measures, such as assumed cost-effective energy efficiency/renewable energy and existing unit retirements. To this end, Synapse will engage in a detailed Reference Case assessment to determine how close existing commitments, policies, programs, and regulations get to meeting CPP requirements on a mass and rate basis. Synapse will present the results of the Reference Case assessment to MPSC/MDEQ staff in a webinar. Reference case modeling will occur largely in parallel with Compliance Strategy Design, discussed above.

Draft Compliance Case Modeling. In consultation with MPSC/MDEQ, Synapse will model electric sector impacts from the six compliance strategies developed using the CP3T screening mechanism (see above). Starting with the Reference case as a basis, we will model the incremental measures identified in the compliance pathways, such as emissions budget trading programs, unit-specific emissions limits, energy efficiency/renewable energy measures, heat rate improvements, discrete fuel switching, and/or unit retirements into the system. We will draw on the costs and program availability developed during the input development stage to populate the model with compliance strategies.

We expect to use the System Optimizer framework to seek least cost compliance meeting reliability and efficacy constraints. In addition, we will design and/or screen model runs to be sensitive to other state concerns or requirements, such as rate shock, interstate cooperation, or strategic executive initiatives. Each of the six compliance pathways will be tested within the agreed upon uncertainty or sensitivity construct, and evaluated according to the agreed upon scoring mechanism.

To the extent that modeling compliance cases requires the implementation of unforeseen additional model constraints (e.g. market imports or exports, incremental generation limits, etc...), Synapse will

report such findings to the MPSC/MDEQ at the time that the additional constraint is required and seek immediate feedback.

Synapse will present key elements and findings from the reference and compliance case modeling to MPSC/MDEQ, including expected wholesale market prices (MISO and PJM), retail electric prices, emissions for the state (by affected unit and all units), a breakdown of generation by fuel use and emissions, an estimate of the state weighted average emissions rate (using the formula provided by EPA), and total incremental net present value of revenue requirements. Comparing scenarios, we will provide an estimate of total compliance costs (if any), and an estimate of the compliance costs on various rate classes. Finally, we expect to provide, if requested, a recommendation for a final compliance case.

We currently anticipate providing a full week to MPSC/MDEQ to assess modeling results and query model elements and assumptions prior to beginning final compliance case modeling. To the extent that additional rounds of draft modeling and re-assessment are needed prior to the assessment of a final case, Synapse will work to accommodate such requirements within the timeframe and budget available.

Final Compliance Case Modeling. Once a final compliance strategy is determined, Synapse will incorporate MPSC/MDEQ feedback and design a model run to incorporate the state's requirements and measures. Using the outcome of this modeling, Synapse will present, for both the reference and compliance cases, an assessment of rate and bill impacts and anticipated economic (i.e. job-year) impacts in Michigan. We will work with MPSC staff to estimate rate impacts at an appropriate level of resolution, depending on current tariff structures and anticipated rate treatment for various program elements.

To assess economic co-benefits of the final compliance option, Synapse will develop an economic impact analysis for the compliance case relative to the reference case. We will use IMPLAN, a standard economic input-output model, to estimate the indirect and induced impacts (also known as spin-off or multiplier impacts) in Michigan. These impacts will come from construction, operations and maintenance (O&M) of energy resources as well as changes to customers' bills as a result of the Clean Power Plan. Over the last four years, Synapse has developed custom spending patterns for specific types of energy resources, based in part on NREL's JEDI model. We will employ spending patterns on construction and operations and maintenance (O&M) for each type of energy resource (including energy efficiency), and use the relationships between required industries in the IMPLAN model to estimate the indirect and induced impacts from each resource. The results will show the change in Michigan jobs, income, and GDP resulting from the Clean Power Plan.

To assess environmental co-benefits of the final compliance option, Synapse will estimate health impacts from the reference and compliance cases. Synapse will use plant-specific damage functions per ton of NOX, SO2 and (as available) particulate matter, based on a rigorous 2010 National Research Council (NRC) study. We will work closely with MDEQ/MPSC to ensure that results are accurate for Michigan.

Finally, Synapse will identify specific plan features and design elements in the compliance plan that may be appropriately defined as federally enforceable emissions limits (i.e. for EGU) and state enforceable programs and/or measures, as applicable in the final rule.

Work and Deliverable

Contractor must provide Deliverables/Services and staff, and otherwise do all things necessary for or incidental to the performance of work, as set forth below:

1. Contractor will provide monthly project reports on the ongoing work performed highlighting all relevant work undertaken for the period and status of milestones and work products developed. A final project report including key findings and recommendations detailing the results of the various scenarios examined must also be submitted.
2. Contractor will provide, in MS Excel format, all data used in the various scenarios examined.
3. Contractor will provide follow-up throughout the contract period and report to MPSC/DEQ staff on progress as they continue to evaluate various compliance scenarios for final 111(d) rule. Additional meetings will be scheduled on as needed basis for clarification or guidance as appropriate.

Please explain in detail how you will meet the reporting requirements, including project reports and establishment of a final report. Discuss capabilities for preparing and issuing all required reports.

Communication with the client through a highly interactive process, such as in compliance planning, is key to the success of the project. Synapse recognizes that this form of compliance planning is not viable or defensible without the ongoing engagement of MPSC/MDEQ staff. To that end, we are proposing multiple stages of formal and informal check-ins, in addition to the final report.

1. Synapse will provide at least two staff (the project manager and primary modeler) to meet with MPSC/MDEQ staff in Lansing (or a different location as required) at the opening and closure of this project. The purpose of the first meeting is to provide an overview of the process, brief staff on the final rule and requirements for a state plan (to the extent necessary), and receive feedback on expected state priorities and input data. The purpose of the closing meeting will be to present the results of the final modeling analysis, provide an overview of the final report, provide a brief review of input and output workpapers to technical staff, and answer remaining questions about the modeling or assessment.
2. Synapse will coordinate bi-weekly check-in calls to update staff on progress, milestones, and difficulties, and to answer questions or concerns.
3. Synapse will submit monthly reports to MPSC and MDEQ staff detailing Synapse activities performed in the prior month and anticipated in the next month, difficulties encountered, milestones accomplished, deliverables provided, and budget status relative to expectations. We expect to provide reports a week after the closure of each month.
4. Synapse will provide a final report on this project detailing (a) compliance strategies evaluated, (b) design features of compliance measures, (c) the costs, implications, and evaluation criteria of the reference case and draft compliance cases, (d) the customer, economic, and co-benefit impacts of the final compliance case, and (e) the federal and state enforceable measures and program elements that may be required for submission to EPA in a final State Plan. Synapse expects to draft the report throughout the input development, compliance case development and modeling process, finalizing the report after the final compliance case is run. A draft of the final report will be provided to MPSC/MDEQ at or prior to the in-person wrap-up meeting. We expect to provide at least a full week for staff to review the final report prior to beginning edits and finalization.

Synapse understands that the modeling performed on behalf of the state of Michigan is public in nature and is to inform a public rulemaking and policy process, and therefore expects that all communications, draft materials, and workpapers may be available for public scrutiny. To expedite transparency, Synapse will ensure that workpapers are organized for staff review. We expect to be able to provide

final workpapers for each segment of this project within a month of the closure of the stage, but can provide draft workpapers for review and assessment by MPSC/MDEQ at any stage. For example, during the development of inputs, Synapse and staff may collaborate on cost assumptions for renewable energy options and share draft workpapers. If the input development process closes in late September, we would then expect to be able to provide final input workpapers in late October to allow for a quality control assessment.

Roles and Responsibilities

Contractor Staff, Roles, and Responsibilities

Bidder should identify any full/part time personnel, and clearly state each person's role and responsibilities. Bidder will identify where contractor staff will be physically located during the contract performance. If an overall organization chart has been developed, the bidder should reference the chart as well.

The Synapse team members are listed below, along with their roles and brief bios. We provide a detailed breakdown of staff time by task in the project plan on the following pages. All staff will be based in our Cambridge, Massachusetts office. Resumes are attached.

Jeremy Fisher, PhD, Principal Associate: Project manager

Engaged in all steps, client communications, reports, responsibility for work product, schedule, quality

Jeremy Fisher brings a background in global ecosystem modeling and climate impact science to energy system planning and analysis. His work at Synapse has focused on electric utility resource planning, the impact of environmental regulations on the electric sector, air emissions, the development of long-term alternative energy plans, and the development of analytical tools and technical guidance for the U.S. Environmental Protection Agency (EPA), state regulators, and other clients.

Patrick Luckow, Senior Associate: Primary modeler

Lead modeler for System Optimizer modeling, also price forecasts for emissions and market electricity prices

Patrick Luckow performs analyses of electric power systems using industry-standard models to evaluate long-term energy plans and the environmental and economic impacts of policy initiatives. His recent work at Synapse includes analysis of the market price impact of adding high levels of wind resources in wholesale electricity markets; modeling the New England electric system to calculate avoided costs associated with energy efficiency programs; using the ReEDS model to analyze several national clean energy futures for Clean Power Plan compliance; and using the PLEXOS model for price forecasting in California. Mr. Luckow has reviewed utilities' resource plans across the country and has submitted expert testimony based on his analysis, frequently in regions focusing on the integration of unprecedented levels of wind and solar energy.

Elizabeth A. Stanton, PhD, Principal Economist

Lead coordinator for model input development, coordination between CP3T strategy screening and modeling, draft final report

Liz Stanton is a principal economist at Synapse. She has more than 15 years of professional experience as an environmental economist, and has authored more than 80 reports, policy studies, white papers, journal articles, and book chapters on topics related to energy, the economy, and the environment.

Patrick Knight, Associate

Lead on compliance strategy development (CP3T)

Patrick Knight performs consulting, conducts research, and assists in writing testimony and reports for Synapse. Much of his work focuses on analysis and modeling of U.S. coal unit economics and resources to displace coal units' capacity, generation, and emissions. Pat was the lead developer for CP3T, Synapse's open-source tool designed to help broadly assess Clean Power Plan compliance options. He also plays a lead role in projects assisting New England energy efficiency program administrators participate in the Forward Capacity Market, and analyzes the performance of energy efficiency plans and programs.

Sarah Jackson, Senior Associate

Lead on environmental compliance and rule specifications for plan and demonstration requirements

Sarah Jackson brings a background in environmental policy and consensus-building to Synapse's work. Formerly of Earthjustice, she has more than 10 years of experience analyzing federal and state regulations, policies, and environmental planning documents. Ms. Jackson applies this experience at Synapse to evaluate the impacts of policies and regulations on the electric sector, the costs and impacts of electricity production options, and the environmental compliance assumptions used by utilities in major regulatory filings. She has supported the development of expert witness testimony in several cases analyzing proposed and historical coal-plant investments, including cases in Indiana, Oregon, Wyoming, Utah, Kentucky, Louisiana, and Michigan.

Nidhi Santen, Principal Associate

Modeler for System Optimizer

Nidhi Santen consults on issues of energy and electricity systems modeling; climate policy analysis; and computational methods for investment planning, decision-making under uncertainty, and risk analysis.

Kenji Takahashi, Senior Associate

Input assumptions for energy efficiency

Kenji Takahashi conducts economic, environmental, and policy analysis of electric system technologies, policies, and regulations associated with both supply- and demand-side resources. He has significant experience in the analysis of integrated resource plans, renewable energy policies, distributed generation, demand response (including advanced metering infrastructure), and energy efficiency measures and programs. Kenji is a core member of Synapse's industry-leading energy efficiency team.

Tommy Vitolo, PhD, Senior Associate

Input assumptions for renewable energy, quality control review on inputs

Tommy Vitolo is a senior associate at Synapse. He earned his PhD in systems engineering from Boston University, and has more than seven years of professional experience as a consultant, researcher, and analyst. Much of his work focuses on the integration of renewable energy into power systems.

David White, PhD, Senior Consultant (subcontractor)

Input assumptions for demand forecast, quality control on modeling

A long-time consultant on Synapse projects, David White has analyzed energy systems and been involved with computer modeling since the mid-1970s. His work at Synapse focuses on the technical analysis and modeling of electric system operations and expansion, electricity industry regulation, energy efficiency programs, renewable resource technologies, and clean air regulations and policies.

Tyler Comings, Senior Associate

Economic co-benefits analysis, input assumptions quality control

Tyler Comings conducts research on energy system planning and coal plant economics, and performs economic modeling and analysis in support of a wide range of projects. He has ten years of experience performing economic impact and benefit-cost analyses, statistical modeling, and research on environmental issues

Project Plan

The Bidder shall propose a Project Plan to be used in conjunction with the work to be performed under this RFP. Project plan should identify items such as the required contact personnel; project management process (see below); project breakdown identifying sub-projects, tasks, and resources required; expected frequency and mechanisms for updates/progress reviews; process for addressing issues/changes; and individuals responsible for receiving/reacting to the requested information.

The Contractor will carry out this project under the direction and control of the Program Manager. Within 30 calendar days of the Effective Date, the Contractor must submit a management plan and project plan to the Program Manager for final approval. The plan must include: (a) the Contractor's organizational chart with names and title of personnel assigned to the project, which must align with the staffing stated in accepted proposals; and (b) the project breakdown showing sub-projects, tasks, and resources required.

Synapse Points of Contact:

Dr. Jeremy Fisher will serve as Synapse's project manager for this work. He will be the primary liaison with client for this project, and will be responsible for developing a clear work plan, overseeing the project team, and ensuring that deliverables are provided on schedule and to the satisfaction of client. For all matters related to contracts and billing, our primary contact is MJ Jensen, Director of Finance and Administration. Our understanding is that Shay Gaffey will serve as the primary point of contact for the client for this proposal.

Project Management Approach:

Synapse places a strong emphasis on project management practices. We believe it is essential to:

- Communicate regularly throughout the project. Project manager will provide client with project status updates on a biweekly basis.
- Identify key assumptions, technical methodologies, and deliverable outlines early in the project, to the extent possible. Synapse proposes to work with client to determine a process and a schedule for approving these critical components as part of the project kickoff meeting.
- Thoroughly review our work. Synapse uses an internal peer-review system to ensure that our analyses are highly defensible in litigated cases and public forums. We also make a point of hitting interim deadlines so that our clients have sufficient time to review and provide feedback on work products. We ask our clients to consolidate their edits into one document to streamline the feedback process and avoid opportunities for confusion.
- Monitor the project budget closely. Synapse's finance department uses a budget tracking system that is project and task specific, allowing project managers to carefully track expended and remaining budget.
- Be flexible and responsive to changes as they arise. We understand that the scope, timing, and/or the nature of deliverables often evolve throughout the course of a project, for a variety of reasons. With your approval, we will adapt our approach to meet the changing needs of your project.

Project Plan:

On the following page, we provide a chart of the project tasks and deliverables. Following that, we provide a chart showing the breakdown of work by staff member in person days.

Key Date	2015-08-03	2015-08-10	2015-08-17	2015-08-24	2015-08-31	2015-09-07	2015-09-14	2015-09-21	2015-09-28	2015-10-05	2015-10-12	2015-10-19	2015-10-26	2015-11-02	2015-11-09	2015-11-16	2015-11-23	2015-11-30	2015-12-07	2015-12-14	2015-12-21	2015-12-28
Project Initiation																						
Initial coordination meeting	8-19-2015 (Wed)																					
Kickoff meeting at MPSC/MDEQ	9-1-2015 (Tue)																					
Model input development																						
Develop demand forecasts & uncertainty																						
Develop price forecasts & uncertainty																						
Develop EE/RE cost & potential & uncertainty																						
EGU specific inputs																						
Other fed/MI regs & policies																						
Internal review & QC																						
Develop scoring metrics																						
Web meeting on Inputs	9-25-2015 (Fri)																					
Model scenario development																						
Develop CPP compliance strategies																						
MSPSC/MDEQ strategy review	10-7-2015 (Wed)																					
Modeling (draft compliance cases)																						
Reference case modeling																						
Web meeting on reference case	10-14-2015 (Wed)																					
CPP compliance case modeling																						
Internal review & QC																						
Web meeting on draft compliance cas	11-4-2015 (Wed)																					
MPSC/MDEQ compliance case review	11-11-2015 (Wed)																					
Modeling (final cases)																						
Final modeling	11-27-2015 (Fri)																					
Economic co-benefits analysis																						
Environmental co-benefits analysis																						
Internal review & QC	11-27-2015 (Fri)																					
Final report																						
Draft (input assumptions)																						
Draft (reference case)																						
Draft (compliance cases, final)	12-9-2015 (Wed)																					
Wrap up meeting at MPSC/MDEQ	12-10-2015 (Thu)																					
MPSC/MDEQ review	12-18-2015 (Fri)																					
Final report	1-1-2016 (Fri)																					
Management																						
Project Management	Ongoing																					
Monthly Report	1st week of month																					
Bi-weekly check-in	Bi-weekly																					

	Jeremy Fisher Principal/Associate	Patrick Luckow Senior Associate	Liz Stanton Principal Economist	Patrick Knight Associate	Sarah Jackson Principal/Associate	Nidhi Samten Principal Associate	Kenji Takahashi Senior Associate	Tommy Vitolo Senior Associate	David White subcontractor	Tyler Comings Senior Associate	Communications
Project Initiation											
Initial coordination meeting	0.5	0.25	0.25		0.25						
Kickoff meeting at MPSC/MDEQ	2	2			0.5						
Model input development											

	Jeremy Fisher Principal Associate	Patrick Luskow Senior Associate	Liz Stanton Principal Economist	Patrick Knight Associate	Sarah Jackson Principal Associate	Walter Santen Principal Associate	Kenji Takahashi Senior Associate	Tommy Vitolo Senior Associate	David White subcontractor	Tyler Conings Senior Associate	Communications
Develop demand forecasts & uncertainty			0.5	0.5		1			1.5		
Develop price forecasts & uncertainty	1	1.5	0.5						2		
Develop EE/RB cost & potential & uncertainty			0.5	1			2.5	2			
EGU specific inputs	1	2		2.5						1	
Other fed/MI regs & policies			0.5		1.5						
Internal review & QC								0.75		0.75	
Develop scoring metrics								1.5			
Web meeting on inputs	0.5		1								1
Model scenario development											
Develop GPP compliance strategies	0.5	1	1	3	1						
MSPSC/MDEQ strategy review	0.5			1.5	1						
Modelling (draft compliance cases)											
Reference case modelling	1	3	0.5	0.5		3					
Web meeting on reference case		0.5				0.5					0.5
GPP compliance case modelling	2	5	1.5	1.5	1	5					
Internal review & QC									0.75	0.75	
Web meeting on draft compliance cases	0.5	1			0.5	1					0.5
MPSC/MDEQ compliance case review	0.5										1
Modelling (final cases)											
Final modelling	1	3		1.5	0.5	3					
Economic co-benefits analysis			1							7	
Environmental co-benefits analysis	1.5			1.5							
Internal review & QC								0.75	0.75		
Final report											
Draft (input assumptions)	1	0.5	1.5		0.5		1				1.5
Draft (reference case)		0.5	1.5			2					1
Draft (compliance cases, final)	2	2	1.5		2	3					1.5
Wrap up meeting at MPSC/MDEQ	2	2				2					
MPSC/MDEQ review	1		2								1
Final report	0.5		1								1.5
Management											
Project Management	5.5										

	Jeremy Fisher Principal/Associate	Patrick Ludlow Senior Associate	Liz Stanton Principal/Economist	Patrick Knight Associate	Sarah Jackson Principal/Associate	Nidia Santos Principal/Associate	Kenji Takahashi Senior Associate	Tommy Vitolo Senior Associate	David White Subcontractor	Tyler Comings Senior Associate	Communications
Monthly Report	1										
Bi-Weekly check/in	2.75										
Resources & Travel											
• System Optimizer + Base Data											
• INTELPLAN for Michigan											
• Travel (Rickoff)											
• Travel (Cossling)											

Project Plan Management

Bidder shall propose a project management plan for the requested work and deliverables. The plan should include the required tasks for accomplishing the work proposed, a detailed timeline for completing the planned activities and tasks.

The project management plan must include a summary explaining how the proposed project will be monitored to ensure funds are used for the intended purpose, project milestones and timelines are met, and the activities and tasks are completed as agreed upon.

The State Project Manager will meet as needed with the Contractor for the purpose of reviewing progress and providing necessary guidance to the Contractor in solving problems that arise.

Prior to executing any changes to the scope of the project and/or budget, the Contractor must inform the Project Manager in writing outlining the proposed changes.

Contractor will carry out the project under the purview of an assigned Project Manager.

Please provide a sample project management plan used for a project similar in nature to this RFP.

On the following page, we include a project management chart with confidential information removed. We have also removed numerous team member entries due to space issues. Note, this project entails bi-weekly calls with the client as well as our standard client coordination regarding assumptions, methodology, and scope of work.

Synapse's finance department tracks hours billed to specific projects – at the level of tasks and sub-tasks, where necessary – on a weekly basis. More frequent budget updates can be provided at the request of the Project Manager. Project Managers use data from budget updates to populate an integrated budget/timeline spreadsheet, which shows the budget spent and remaining.

Remaining budget (amount removed)	Internal Deadline	External Deadline	05-Jun	12-Jun	19-Jun	26-Jun	03-Jul	10-Jul	17-Jul	24-Jul	31-Jul	07-Aug	14-Aug	21-Aug	28-Aug	04-Sep	11-Sep	Total Hours	PM
Client communication																		24	24
Project coordination																		16	16
Task 1: Deliverable 1																		24	16
Sub-task 1: Assumptions memo	03-Jun																	0	
Sub-task 2: Outline	09-Jun																	4	
Draft Deliverable 1	09-Jun	09-Jun																4	4
Clients' feedback on draft Deliverable 1 due to Synapse		26-Jun																0	
Final Deliverable 1	30-Jun	01-Jul																4	4
Sub-task 3: Technical background paper	09-Jun	26-Jun																4	
Sub-task 4	09-Jun	24-Jun																8	8
Sub-task 5																		0	
Task 2: Deliverable 2																		100	40
Sub-task 1: analysis and write-up	23-Jun																	8	
Sub-task 2: analysis and write-up	23-Jun																	12	4
Sub-task 3: analysis and write-up	23-Jun																	12	4
Sub-task 4: bill impact analysis and write-up	23-Jun																	12	4
Draft Deliverable 2	26-Jun	03-Jul																16	8
Clients' feedback/approval on draft Deliverable 2 due to Synapse		09-Jul																0	
Final Deliverable 2	13-Jul	14-Jul																8	4
Draft Report	26-Jun	03-Jul																16	8
Clients' comments on draft report due to Synapse		09-Jul																0	
Final Report	12-Jul	14-Jul																8	4
Public webinar		21-Jul																8	4
Task 3: Deliverable 3																		192	48
Sub-task 1: model updates	31-Jul																	44	4
Sub-task 2: Public webinar		15-Aug																4	4
Sub-task 3: Updated analysis	28-Aug																	48	8
Sub-task 4: model 2 updates	28-Aug																	8	
Sub-task 5: Updated Bill Impact	28-Aug																	8	
Draft Deliverable 3	28-Aug	04-Sep																16	8
Clients' feedback/approval on draft Deliverable 3 due to Synapse		05-Sep																0	
Final Deliverable 3	03-Sep	09-Sep																12	4
Draft Report	28-Aug	04-Sep																40	16
Clients' comments on draft report due to Synapse		05-Sep																0	
Final Report	08-Sep	09-Sep																12	4
																		Hours	AREF
																		Days	AREF

Additional Contract Activities

1.2 RESERVED

1.3 RESERVED

1.4 RESERVED

2. Acceptance

2.1 Acceptance, Inspection and Testing

The State will use the following criteria to determine acceptance of the Contract Activities:

The Project Manager will review quarterly reports required in Section: Reports, and work with the Contractor to ensure the project is on track and tasks are being completed in accordance with the Scope of Work.

2.2 Final Acceptance

The Michigan Public Service Commission evaluation team and the LARA Contract Compliance Inspector will review all deliverables submitted pursuant to Section: Scope of Work and Deliverables, to determine if the project is complete and meets all contract requirements.

3. Staffing

Version (03/21/14)

3.1 Contractor Representative

The Contractor must appoint (1) one (e.g. Service Manager, Product Representative)) individual, specifically assigned to State of Michigan accounts, that will respond to State inquiries regarding the Contract Activities, answering questions related to ordering and delivery, etc. (the "Contractor Representative").

The Contractor must notify the Contract Administrator at least 30 calendar days before removing or assigning a new Contractor Representative.

3.2 RESERVED

3.3 RESERVED

3.4 Work Hours

The Contractor must provide Contract Activities during the State's normal working hours Monday – Friday 7:00 a.m. to 6:00 p.m. EST.

3.5 Key Personnel

The Contractor must appoint (1) one individual who will be directly responsible for the day-to-day operations of the Contract ("Key Personnel"). Key Personnel must be specifically assigned to the State account, be knowledgeable on the contractual requirements, and respond to State inquiries within 48 hours.

The State has the right to recommend and approve in writing the initial assignment, as well as any proposed reassignment or replacement, of any Key Personnel. Before assigning an individual to any Key Personnel position, Contractor will notify the State of the proposed assignment, introduce the individual to the State's Project Manager, and provide the State with a resume and any other information about the individual reasonably requested by the State. The State reserves the right to interview the individual before granting written approval. In the event the State finds a proposed individual unacceptable, the State will provide a written explanation including reasonable detail outlining the reasons for the rejection. The State may require a 30-calendar day training period for replacement personnel.

Contractor will not remove any Key Personnel from their assigned roles on this Contract without the prior written consent of the State. The Contractor's removal of Key Personnel without the prior written consent of the State is an unauthorized removal ("Unauthorized Removal"). An Unauthorized Removal does not include replacing Key Personnel for reasons beyond the reasonable control of Contractor, including illness, disability, leave of absence, personal emergency circumstances, resignation, or for cause termination of the Key Personnel's employment. Any Unauthorized Removal may be considered by the State to be a material breach of this Contract, in respect of which the State may elect to terminate this Contract for cause under Termination for Cause in the Standard Terms.

It is further acknowledged that an Unauthorized Removal will interfere with the timely and proper completion of this Contract, to the loss and damage of the State, and that it would be impracticable and extremely difficult to fix the actual damage sustained by the State as a result of any Unauthorized Removal. Therefore, Contractor and the State agree that in the case of any Unauthorized Removal in respect of which the State does not elect to exercise its rights under Termination for Cause, Contractor will issue to the State the corresponding credits set forth below (each, an "Unauthorized Removal Credit"):

(i) For the Unauthorized Removal of any Key Personnel designated in the applicable Statement of Work, the credit amount will be \$25,000.00 per individual if Contractor identifies a replacement approved by the State and assigns the replacement to shadow the Key Personnel who is leaving for a period of at least 30 calendar days before the Key Personnel's removal.

(ii) If Contractor fails to assign a replacement to shadow the removed Key Personnel for at least 30 calendar days, in addition to the \$25,000.00 credit specified above, Contractor will credit the State \$833.33 per calendar day for each day of the 30 calendar-day shadow period that the replacement Key Personnel does not shadow the removed Key Personnel, up to \$25,000.00 maximum per individual. The total Unauthorized Removal Credits that may be assessed per Unauthorized Removal and failure to provide 30 calendar days of shadowing will not exceed \$50,000.00 per individual.

Contractor acknowledges and agrees that each of the Unauthorized Removal Credits assessed above: (i) is a reasonable estimate of and compensation for the anticipated or actual harm to the State that may arise from the

Unauthorized Removal, which would be impossible or very difficult to accurately estimate; and (ii) may, at the State's option, be credited or set off against any fees or other charges payable to Contractor under this Contract. The Contractor must identify the Key Personnel, indicate where they will be physically located, describe the functions they will perform, and provide current chronological résumés.

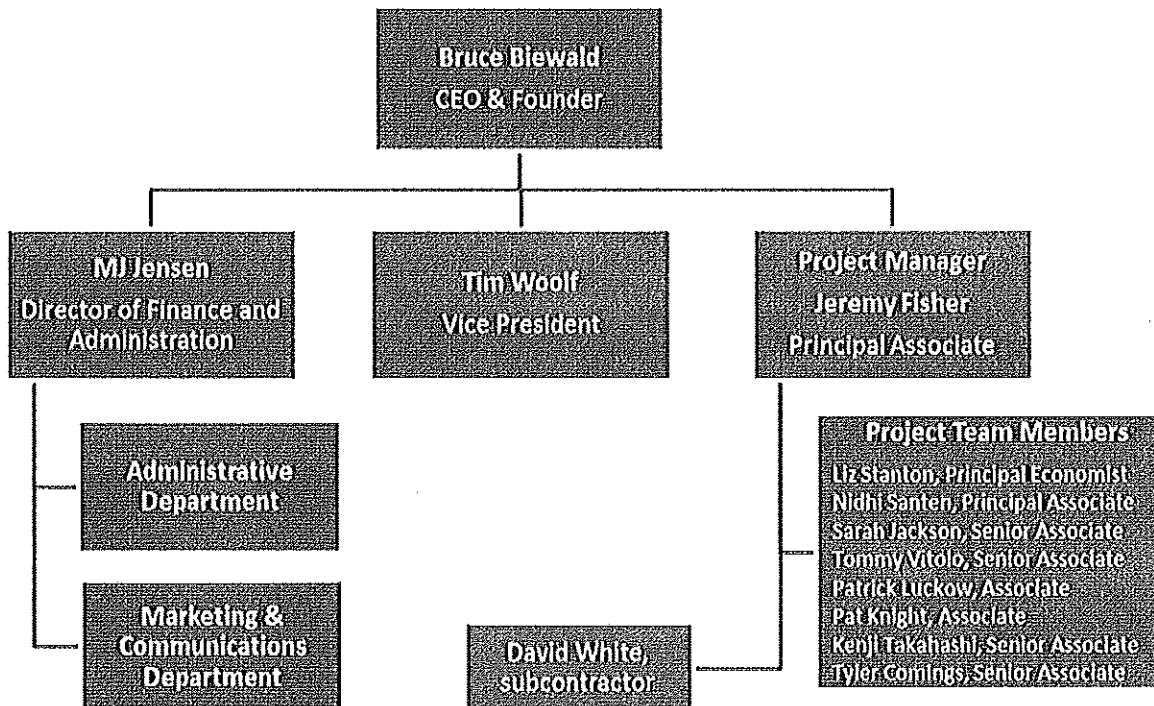
3.6 Organizational Chart

The Contractor must provide an overall organizational chart that details staff members, by name and title, and subcontractors.

On the following page, we provide an organizational chart for Synapse Energy Economics.

Synapse Energy Economics, Inc.

Organizational chart featuring proposed team for MPSC/MDEQ EPA 111(d) Impact Analysis



3.7 Disclosure of Subcontractors

If the Contractor intends to utilize subcontractors, the Contractor must disclose the following:

The legal business name; address; telephone number; a description of subcontractor's organization and the services it will provide; and information concerning subcontractor's ability to provide the Contract Activities.

- The relationship of the subcontractor to the Contractor.
- Whether the Contractor has a previous working experience with the subcontractor. If yes, provide the details of that previous relationship.
- A complete description of the Contract Activities that will be performed or provided by the subcontractor.
- Of the total bid, the price of the subcontractor's work.

David White, PhD, Senior Consultant (subcontractor)

Input assumptions for demand forecast, quality control on modeling (approximately 3% of overall budget)

A long-time consultant on Synapse projects, David White has analyzed energy systems and been involved with computer modeling since the mid-1970s. His work at Synapse focuses on the technical analysis and modeling of electric system operations and expansion, electricity industry regulation, energy efficiency programs, renewable resource technologies, and clean air regulations and policies.

David White is a sole proprietor operating out of his Arlington, Massachusetts home. He has collaborated with Synapse on more than 100 projects over the years, as described in the attached resume. Address: 55 Bow Street, Arlington, MA 02474; Telephone: 617-453-7028.

3.8 RESERVED

4. Project Reports and Meetings

4.1 Reports

The contractor shall begin submitting Monthly Project Reports to the Project Manager three months after execution of the contract. The reports shall include:

- a) Name of Bidder, and dates of current reporting period.
- b) Include a brief summary of work completed during the reporting period and the work to be completed during the subsequent reporting period.
- c) Brief description of problems or delays, real or anticipated that may prevent progress on the project which should be brought to the attention of the Project Manager.
- d) Statement concerning any significant deviation from previously agreed-upon Project Plan, Section 1.040.

The format will be approved by the Project Manager.

4.2 Meetings

The Contractor must attend the following meetings:

- Kick-off meeting at the MPSC offices – 30 days after Contract Award date
- Bi-weekly update meetings to be held via web-based conference
- Wrap-up meeting at the MPSC offices – 2 weeks before final deliverables are submitted

The State may request other meetings, as it deems appropriate.

5. RESERVED

6. Invoice and Payment

6.1 Invoice Requirements

All invoices submitted to the State must include: (a) date; (b) purchase order; (c) quantity; (d) description of the Contract Activities; (e) unit price; (f) shipping cost (if any); and (g) total price. Overtime, holiday pay, and travel expenses will not be paid.

6.2 Payment Methods

The State will make payment for Contract Activities via Purchase Order.

6.3 Procedure

7. Liquidated Damages

Late or improper completion of the Contract Activities will cause loss and damage to the State and it would be impracticable and extremely difficult to fix the actual damage sustained by the State. Therefore, if there is late or improper completion of the Contract Activities the State is entitled to collect liquidated damages in the amount of \$5,000 and an additional \$100 per day for each day Contractor fails to remedy the late or improper completion of the Work.

STATE OF MICHIGAN

Request For Proposal No. 641R5501009

MPSC/MDEQ EPA 111(d) Impact Analysis

This contract is for expert consultant advisory services to perform an analysis of the U.S. Environmental Protection Agency's (EPA) final rule for existing fossil fuel electric generation units (EGU) under Section 111(d) of the federal Clean Air Act (CAA), and provide an economic impact analysis of the rule on the State of Michigan through 2035 as described in Exhibit A (the "Contract Activities").

EXHIBIT B GENERAL PROPOSAL REQUIREMENTS

Contractors must provide a detailed response to each question. Attach any supplemental information and appropriately reference within your response.

	Bidder Response
1. Company Contact Information.	
Sole contact during the RFP process. Include the name, title, and contact information (address, e-mail and phone number).	Jeremy Fisher, Principal Associate 485 Massachusetts Avenue, Suite 2 Cambridge, MA 02139 jfisher@synapse-energy.com (617) 453-7045
Sole contact authorized to receive and sign any resulting Contract.	MJ Jensen, Director of Finance & Administration 485 Massachusetts Avenue, Suite 2 Cambridge, MA 02139 mjjensen@synapse-energy.com (617) 453-7030
2. Company Background Information.	
Legal business name and address.	Synapse Energy Economics, Inc. 485 Massachusetts Avenue, Suite 2 Cambridge, MA 02139
What State is your business incorporated in?	Massachusetts
Phone number.	(617) 661-3248
Website address.	Synapse-energy.com
Number of years in business and number of employees.	19 years, 34 staff members
Legal business name of any applicable parent company and address.	NA
Has there been a recent change in the organizational structure (e.g., management team) or a change of control (merger or acquisition)? If so, why and how has it affected the company?	No
History of company and if growth has been organic, through mergers and acquisitions, or both?	Synapse was founded in 1996 by our current Chief Executive Officer Bruce Biewald. Since that time, Synapse has grown organically to become a leader in providing rigorous analysis of the electric power sector for public interest and governmental clients.

Has your company had any contract terminated for contractor default in the last 3 years? If yes, explain when and the reasons for the termination.	No
3. Business Owned by Qualified Disabled Veteran	
"Qualified Disabled Veteran," as defined by Public Act 431 of 1984, means a business entity that is at least 51% owned by one or more veterans with a service-connected disability. The Act defines "Service-Connected Disability" as a disability incurred or aggravated in the line of active military, naval, or air service as defined in 38 USC 101 (16).	
Is the bidder a disabled Veteran-owned business?	No
To qualify for a Business owned by a qualified disabled Veteran, please provide the following:	
(a) Proof of service and conditions of discharge: DD214 or equivalent,	
(b) Proof of service-connected disability: DD214 if the disability was documented at discharge or Veterans Administration (VA) Rating Decision Letter or equivalent if the disability was documented after discharge, and	
(c) Proof of Ownership: Appropriate legal documents setting forth the ownership of the business entity.	
4. Experience with the State of Michigan.	
Does your company have experience working with the State of Michigan? If so, please provide a list (including the contract number) of the contracts you hold or have held with the State for the last 10 years.	<p>Proposed Sale of Palisades Nuclear Power Plant Client: Michigan Dept of the Attorney General Year: 2007. Synapse evaluated the proposed sale of the Palisades nuclear power plant. (Case No: U-14992, PO No: 111B7200025).</p> <p>Midland Resource Conservation Plan Client: Michigan Dept of the Attorney General Year: 2006. Synapse assisted the Attorney General in Michigan by reviewing the Resource Conservation Plan for purchases from Midland Cogeneration Venture Limited Partnership in Michigan. (Case No: U-14274-R, PO No: 111B6200084).</p>
5. Gross Annual Sales	
Contractor must identify the gross annual sales for the last 5 years.	\$5.5 million
If the award of any resulting contract will increase your gross revenue by more than 25% from the last year's sales, explain how you will scale up to manage this increase.	NA
6. Experience	
Please describe at least three (3) relevant experiences from the last five (5) years supporting your ability to successfully manage a contract of similar size and scope for the work described in this RFP.	

Experience 1	
Company name Contact name Contact role at time of project Contact phone Contact email	US EPA (as a subcontractor to ERG) Robyn DeYoung State and Local Climate and Energy Program 202-343-9080 DeYoung.Robyn@epa.gov
City State Zip Code	Washington District of Columbia 20460
1. Project name and description of the scope of the project 2. What role did your company play 3. How is this project experience relevant to the subject of this RFP	<p>1. Technical Support for U.S. Environmental Protection Agency (EPA) State and Local Climate and Energy Program in the Climate Protection Partnership Division (CPPD). Synapse developed the Avoided Emissions and Generation Tool (AVERT) with EPA to assist states using energy efficiency and renewable energy to meet air quality standards. In 2014, Synapse was tasked to support 111(d) proposal and final rulemaking activities, including guidance on State Plan development, and a review of state energy efficiency programs and policies. In 2015, Synapse provided electric system training to all 10 EPA Regional Offices under this contract, and authored chapter 7.1 of the Energy and Environment Guide to Action. Synapse continues to provide technical guidance on an ongoing basis. Overall, project contains multiple separate technical assistance scopes of work.</p> <p>2. Synapse has provided all of the services described in the scope above as a subcontractor to Eastern Research Group.</p> <p>3. Synapse understands, in depth, EPA's expectations for State Plans under 111(d), and has worked with the Agency to develop some of the expertise that regions will use to assess State Plan efficacy.</p>
Total project cost	The AVERT project alone is a multi-year project worth several hundred thousand dollars. We are unable to disclose the total project cost of the technical assistance Synapse is providing at this time.
Start and end date (MM/YY – MM/YY) of the Project	10/2011 – Ongoing
Status (completed, live, other – specify phase)	The AVERT project is in Phase IV. The others are recently completed or ongoing.
Results obtained	<ul style="list-style-type: none"> • Synapse authored Chapter 7.1 of the 2015 edition of the Clean Energy-Environment Guide to Action on utility planning practices (http://epa.gov/statelocalclimate/resources/action-guide.html). • Synapse produced the AVERT model and supporting material, currently available on the EPA website (www.epa.gov/avert).

	<ul style="list-style-type: none"> Synapse has produced multiple internal papers, presentations and trainings for EPA, but we are unable to disclose those results at this time.
Experience 2	
Company name Contact name Contact role at time of project Contact phone Contact email	National Association of State Utility Consumer Advocates Charlie Acquard Executive Director 301-589-6313 charlie@nasuca.org
City State Zip Phone	Silver Spring MD 20910 301-589-6313
1. Project name and description of the scope of the project 2. What role did your company play 3. How is this project experience relevant to the subject of this RFP	1. Clean Power Plan Reports and Outreach for National Association of State Utility Consumer Advocates (ongoing). NASUCA Clean Power Plan Final Rule Support (upcoming). Support for the development of the Clean Power Plan Planning Tool (CP3T) 2. Synapse is supporting the National Association of State Utility Consumer Advocates and its members in addressing the EPA's proposed Clean Power Plan in a manner that is cost-effective and efficient from an electricity consumer perspective. 3. Synapse has already identified and analyzed many of the issues relevant to effective planning for the Clean Power Plan. We developed CP3T, a widely used tool for evaluating Clean Power Plan strategies and expected to be a key component of screening in the Michigan assessment. We have also secured funding to analyze the final Clean Power Plan rule once it is released and provide guidance to states on key issues in the final version.
Dollar value	\$143,000+\$82,000 (funded by the Energy Foundation)
Start and end date (MM/YY – MM/YY)	02/15-11/15
Status (completed, live, other – specify phase)	Ongoing
Results obtained	Synapse released the following reports and presentations, all publicly available for free on our website: <ul style="list-style-type: none"> Best Practices in Planning for Clean Power Plan Compliance Final Report: Implications of EPA's Proposed "Clean Power Plan" Clean Power Plan: A Toolkit for State Compliance (slides) Multi-State Compliance and CP3T (slides) Clean Power Plan: Key Issues for Consumers (slides)
Experience 3	
Company name Contact name	Energy Foundation Meredith Wingate

Contact role at time of project Contact phone Contact email	Program Director, Coal Program 415-561-6700 meredith@ef.org
City State Zip Phone	San Francisco California 94001 415-561-6700
1. Project name and description of the scope of the project 2. What role did your company play 3. How is this project experience relevant to the subject of this RFP	1. Consumer Costs of Low-Emissions Futures: Analysis of the near-and long-term consumer impacts of aggressive clean energy planning. 2. Synapse is preparing a series of briefs on the costs to consumers of low-emissions futures. The briefs will be informed by modeling studies that investigate the costs of EPA's Clean Power Plan as well as a scenario in which we achieve low-cost emissions reductions even greater than those called for by the EPA. 3. Synapse will be able to leverage the work it has already done to produce a more refined and robust analysis.
Dollar value	\$98,600
Start and end date (mm/yy – mm/yyyy)	06/15-five weeks after final CPP rule is finalized
Status (completed, live, other – specify phase)	Ongoing, first stage nearly complete
Results obtained	The first brief on consumer costs at the national level is available on our website at: http://www.synapse-energy.com/project/consumer-costs-low-emissions-futures . We expect the release of the second brief and an accompanying report on our state-by-state analysis in late July.
7. Strategic Relationships.	
Explain any partnerships and strategic relationships you currently have or have used that would bring significant value to the State, and how that relationship will bring value to the State.	Synapse has been providing technical assistance to EPA on a number of relevant issues, as described above. As a result, we anticipate having a thorough understanding of the final rule. Energy Foundation: EF has already committed to funding for NASUCA Clean Power Plan Final Rule Support. This provides a cost savings to Michigan, as Synapse will not have to bill for the time needed to analyze the final rule once it is released.
8. Principal Place of Business.	
The Contractor must identify the location (city, state and zip code) that would have primary responsibility for this account if awarded a contract.	Cambridge, MA 02139
9. Standard Contract	
The Contractor must affirm that it agrees with the attached Contract Terms, or if it does not agree, identify the specific exceptions to the Contract Terms.	We agree with the attached Contract Terms.

Exceptions must be listed here and Contractor must provide a redline version as an attachment.	
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STATE OF MICHIGAN

STANDARD CONTRACT TERMS

MPSC/MDEQ EPA 111(d) Impact Analysis

This STANDARD CONTRACT ("Contract") is agreed to between the State of Michigan (the "State") and Synapse Energy Economics, Inc. ("Contractor"), incorporated in the State of Massachusetts. This Contract is effective on September 1, 2015, and unless terminated, expires on January 1, 2016.

This Contract may be renewed for up to 1 additional year period(s). Renewal must be by written agreement of the parties and will automatically extend the Term of this Contract.

The parties agree as follows:

1. **Duties of Contractor.** Contractor must perform the services and provide the deliverables described in **Exhibit A – Statement of Work** (the "Contract Activities"). An obligation to provide delivery of any commodity is considered a service and is a Contract Activity.

Contractor must furnish all labor, equipment, materials, and supplies necessary for the performance of the Contract Activities, and meet operational standards, unless otherwise specified in Exhibit A.

Contractor must: (a) perform the Contract Activities in a timely, professional, safe, and workmanlike manner consistent with standards in the trade, profession, or industry; (b) meet or exceed the performance and operational standards, and specifications of the Contract; (c) provide all Contract Activities in good quality, with no material defects; (d) not interfere with the State's operations; (e) obtain and maintain all necessary licenses, permits or other authorizations necessary for the performance of the Contract; (f) cooperate with the State, including the State's quality assurance personnel, and any third party to achieve the objectives of the Contract; (g) return to the State any State-furnished equipment or other resources in the same condition as when provided when no longer required for the Contract; (h) not make any media releases without prior written authorization from the State; (i) assign to the State any claims resulting from state or federal antitrust violations to the extent that those violations concern materials or services supplied by third parties toward fulfillment of the Contract; (j) comply with all State physical and IT security policies and standards which will be made available upon request; and (k) provide the State priority in performance of the Contract except as mandated by federal disaster response requirements. Any breach under this paragraph is considered a material breach.

Contractor must also be clearly identifiable while on State property by wearing identification issued by the State, and clearly identify themselves whenever making contact with the State.

2. **Notices.** All notices and other communications required or permitted under this Contract must be in writing and will be considered given and received: (a) when verified by written receipt if sent by courier; (b) when actually received if sent by mail without verification of receipt; or (c) when verified by automated receipt or electronic logs if sent by facsimile or email.

If to State:	If to Contractor:
Shay Gaffey Department of Licensing & Regulatory Affairs P. O. Box 30004 Lansing, MI 48909 gaffey@michigan.gov	MJ Jensen Synapse Energy Economics, Inc. 485 Massachusetts Avenue, Suite 2 Cambridge, MA 02139 mjensen@synapse-energy.com

(517) 335-1971	(617) 661-3248
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3. **Contract Administrator.** The Contract Administrator for each party is the only person authorized to modify any terms and conditions of this Contract (each a "Contract Administrator"):

State: Shay Gaffey Department of Licensing & Regulatory Affairs P. O. Box 30004 Lansing, MI 48909 gaffeys@michigan.gov (517) 335-1971	Contractor: MJ Jensen Synapse Energy Economics, Inc. 485 Massachusetts Avenue, Suite 2 Cambridge, MA 02139 mijenson@synapse-energy.com (617) 453-7030
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4. **Program Manager.** The Program Manager for each party will monitor and coordinate the day-to-day activities of the Contract (each a "Program Manager"):

State: Steve Kulesia, Manager, Generation and Certificate of Need Section Michigan Public Service Commission Department of Licensing and Regulatory Affairs 7109 W. Saginaw Highway Lansing, MI 48909 Email: Kulesias@michigan.gov Phone: (517) 284-8244	Contractor: Jeremy Fisher Synapse Energy Economics, Inc. 485 Massachusetts Avenue, Suite 2 Cambridge, MA 02139 jfisher@synapse-energy.com (617) 453-7045
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5. **Performance Guarantee.** Contractor must at all times have financial resources sufficient, in the opinion of the State, to ensure performance of the Contract and must provide proof upon request. The State may require a performance bond (as specified in Exhibit A) if, in the opinion of the State, it will ensure performance of the Contract.
6. **Insurance Requirements.** Contractor must maintain the insurances identified below and is responsible for all deductibles. All required insurance must: (a) protect the State from claims that may arise out of, are alleged to arise out of, or result from Contractor's or a subcontractor's performance; (b) be primary and non-contributing to any comparable liability insurance (including self-insurance) carried by the State; and (c) be provided by an company with an A.M. Best rating of "A" or better and a financial size of VII or better.

Insurance Type	Additional Requirements
Commercial General Liability Insurance	
<u>Minimal Limits:</u> \$1,000,000 Each Occurrence Limit \$1,000,000 Personal & Advertising Injury Limit \$2,000,000 General Aggregate Limit \$2,000,000 Products/Completed Operations <u>Deductible Maximum:</u> \$50,000 Each Occurrence	Contractor must have their policy endorsed to add "the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees, and agents" as additional insureds using endorsement CG 20 10 11 85, or both CG 2010 07 04 and CG 2037 07 0.
Umbrella or Excess Liability Insurance	
<u>Minimal Limits:</u> \$5,000,000 General Aggregate	Contractor must have their policy endorsed to add "the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees, and agents" as additional insureds.
Automobile Liability Insurance	

Minimal Limits: \$1,000,000 Per Occurrence	
Workers' Compensation Insurance	
Minimal Limits: Coverage according to applicable laws governing work activities.	Waiver of subrogation, except where waiver is prohibited by law.
Employers Liability Insurance	
Minimal Limits: \$500,000 Each Accident \$500,000 Each Employee by Disease \$500,000 Aggregate Disease.	
Professional Liability (Errors and Omissions) Insurance	
Minimal Limits: \$3,000,000 Each Occurrence \$3,000,000 Annual Aggregate	
Deductible Maximum: \$50,000 Per Loss	

If any of the required policies provide claim-made coverage, the Contractor must: (a) provide coverage with a retroactive date before the effective date of the contract or the beginning of Contract Activities; (b) maintain coverage and provide evidence of coverage for at least three (3) years after completion of the Contract Activities; and (c) if coverage is canceled or not renewed, and not replaced with another claims-made policy form with a retroactive date prior to the contract effective date, Contractor must purchase extended reporting coverage for a minimum of three (3) years after completion of work.

Contractor must: (a) provide insurance certificates to the Contract Administrator, containing the agreement or purchase order number, at Contract formation and within 20 calendar days of the expiration date of the applicable policies; (b) require that subcontractors maintain the required insurances contained in this Section; (c) notify the Contract Administrator within 5 business days if any insurance is cancelled; and (d) waive all rights against the State for damages covered by insurance. Failure to maintain the required insurance does not limit this waiver.

This Section is not intended to and is not be construed in any manner as waiving, restricting or limiting the liability of either party for any obligations under this Contract (including any provisions hereof requiring Contractor to indemnify, defend and hold harmless the State).

7. **Independent Contractor.** Contractor is an independent contractor and assumes all rights, obligations and liabilities set forth in this Contract. Contractor, its employees, and agents will not be considered employees of the State. No partnership or joint venture relationship is created by virtue of this Contract. Contractor, and not the State, is responsible for the payment of wages, benefits and taxes of Contractor's employees and any subcontractors. Prior performance does not modify Contractor's status as an independent contractor. Contractor hereby acknowledges that the State is and will be the sole and exclusive owner of all right, title, and interest in the Contract Activities and all associated intellectual property rights, if any. Such Contract Activities are works made for hire as defined in Section 101 of the Copyright Act of 1976. To the extent any Contract Activities and related intellectual property do not qualify as works made for hire under the Copyright Act, Contractor will, and hereby does, immediately on its creation, assign, transfer and otherwise convey to the State, irrevocably and in perpetuity, throughout the universe, all right, title and interest in and to the Contract Activities, including all intellectual property rights therein.
8. **Subcontracting.** Contractor may not delegate any of its obligations under the Contract without the prior written approval of the State. Contractor must notify the State at least 90 calendar days before the proposed delegation, and provide the State any information it requests to determine whether the delegation is in its best interest. If approved, Contractor must: (a) be the sole point of contact regarding all contractual matters, including payment and charges for all Contract Activities; (b) make all payments to the subcontractor; and (c) incorporate the terms and conditions contained in this Contract in any subcontract with a subcontractor. Contractor remains responsible for the completion of the Contract

Activities, compliance with the terms of this Contract, and the acts and omissions of the subcontractor. The State, in its sole discretion, may require the replacement of any subcontractor.

9. **Staffing.** The State's Contract Administrator may require Contractor to remove or reassign personnel by providing a notice to Contractor.
10. **Background Checks.** Upon request, Contractor must perform background checks on all employees and subcontractors and its employees prior to their assignment. The scope is at the discretion of the State and documentation must be provided as requested. Contractor is responsible for all costs associated with the requested background checks. The State, in its sole discretion, may also perform background checks.
11. **Assignment.** Contractor may not assign this Contract to any other party without the prior approval of the State. Upon notice to Contractor, the State, in its sole discretion, may assign in whole or in part, its rights or responsibilities under this Contract to any other party. If the State determines that a novation of the Contract to a third party is necessary, Contractor will agree to the novation, provide all necessary documentation and signatures, and continue to perform, with the third party, its obligations under the Contract.
12. **Change of Control.** Contractor will notify, at least 90 calendar days before the effective date, the State of a change in Contractor's organizational structure or ownership. For purposes of this Contract, a change in control means any of the following: (a) a sale of more than 50% of Contractor's stock; (b) a sale of substantially all of Contractor's assets; (c) a change in a majority of Contractor's board members; (d) consummation of a merger or consolidation of Contractor with any other entity; (e) a change in ownership through a transaction or series of transactions; (f) or the board (or the stockholders) approves a plan of complete liquidation. A change of control does not include any consolidation or merger effected exclusively to change the domicile of Contractor, or any transaction or series of transactions principally for bona fide equity financing purposes.

In the event of a change of control, Contractor must require the successor to assume this Contract and all of its obligations under this Contract.

13. **Ordering.** Contractor is not authorized to begin performance until receipt of authorization as identified in Exhibit A.
14. **Acceptance.** Contract Activities are subject to inspection and testing by the State within 30 calendar days of the State's receipt of them ("State Review Period"), unless otherwise provided in Exhibit A. If the Contract Activities are not fully accepted by the State, the State will notify Contractor by the end of the State Review Period that either: (a) the Contract Activities are accepted, but noted deficiencies must be corrected; or (b) the Contract Activities are rejected. If the State finds material deficiencies, it may: (i) reject the Contract Activities without performing any further inspections; (ii) demand performance at no additional cost; or (iii) terminate this Contract in accordance with Section 21, Termination for Cause.

Within 10 business days from the date of Contractor's receipt of notification of acceptance with deficiencies or rejection of any Contract Activities, Contractor must cure, at no additional cost, the deficiency and deliver unequivocally acceptable Contract Activities to the State. If acceptance with deficiencies or rejection of the Contract Activities impacts the content or delivery of other non-completed Contract Activities, the parties' respective Program Managers must determine an agreed to number of days for re-submission that minimizes the overall impact to the Contract. However, nothing herein affects, alters, or relieves Contractor of its obligations to correct deficiencies in accordance with the time response standards set forth in this Contract.

If Contractor is unable or refuses to correct the deficiency within the time response standards set forth in this Contract, the State may cancel the order in whole or in part. The State, or a third party identified by the State, may perform the Contract Activities and recover the difference between the cost to cure and the Contract price plus an additional 10% administrative fee.

15. **Delivery.** Contractor must deliver all Contract Activities F.O.B. destination, within the State premises with transportation and handling charges paid by Contractor, unless otherwise specified in Exhibit A. All containers and packaging becomes the State's exclusive property upon acceptance.

16. **Risk of Loss and Title.** Until final acceptance, title and risk of loss or damage to Contract Activities remains with Contractor. Contractor is responsible for filing, processing, and collecting all damage claims. The State will record and report to Contractor any evidence of visible damage. If the State rejects the Contract Activities, Contractor must remove them from the premises within 10 calendar days after notification of rejection. The risk of loss of rejected or non-conforming Contract Activities remains with Contractor. Rejected Contract Activities not removed by Contractor within 10 calendar days will be deemed abandoned by Contractor, and the State will have the right to dispose of it as its own property. Contractor must reimburse the State for costs and expenses incurred in storing or effecting removal or disposition of rejected Contract Activities.
17. **Warranty Period.** The warranty period, if applicable, for Contract Activities is a fixed period commencing on the date specified in Exhibit A. If the Contract Activities do not function as warranted during the warranty period the State may return such non-conforming Contract Activities to the Contractor for a full refund.
18. **Terms of Payment.** Invoices must conform to the requirements communicated from time-to-time by the State. All undisputed amounts are payable within 45 days of the State's receipt. Contractor may only charge for Contract Activities performed as specified in Exhibit A. Invoices must include an itemized statement of all charges. The State is exempt from State sales tax for direct purchases and may be exempt from federal excise tax, if Services purchased under this Agreement are for the State's exclusive use. Notwithstanding the foregoing, all prices are inclusive of taxes, and Contractor is responsible for all sales, use and excise taxes, and any other similar taxes, duties and charges of any kind imposed by any federal, state, or local governmental entity on any amounts payable by the State under this Contract.

The State has the right to withhold payment of any disputed amounts until the parties agree as to the validity of the disputed amount. The State will notify Contractor of any dispute within a reasonable time. Payment by the State will not constitute a waiver of any rights as to Contractor's continuing obligations, including claims for deficiencies or substandard Contract Activities. Contractor's acceptance of final payment by the State constitutes a waiver of all claims by Contractor against the State for payment under this Contract, other than those claims previously filed in writing on a timely basis and still disputed.

The State will only disburse payments under this Contract through Electronic Funds Transfer (EFT). Contractor must register with the State at <http://www.michigan.gov/cpexpress> to receive electronic fund transfer payments. If Contractor does not register, the State is not liable for failure to provide payment. Without prejudice to any other right or remedy it may have, the State reserves the right to set off at any time any amount then due and owing to it by Contractor against any amount payable by the State to Contractor under this Contract.

19. **Liquidated Damages.** Liquidated damages, if applicable, will be assessed as described in Exhibit A.
20. **Stop Work Order.** The State may suspend any or all activities under the Contract at any time. The State will provide Contractor a written stop work order detailing the suspension. Contractor must comply with the stop work order upon receipt. Within 90 calendar days, or any longer period agreed to by Contractor, the State will either: (a) issue a notice authorizing Contractor to resume work, or (b) terminate the Contract or purchase order. The State will not pay for Contract Activities, Contractor's lost profits, or any additional compensation during a stop work period.
21. **Termination for Cause.** The State may terminate this Contract for cause, in whole or in part, if Contractor, as determined by the State: (a) endangers the value, integrity, or security of any location, data, or personnel; (b) becomes insolvent, petitions for bankruptcy court proceedings, or has an involuntary bankruptcy proceeding filed against it by any creditor; (c) engages in any conduct that may expose the State to liability; (d) breaches any of its material duties or obligations; or (e) fails to cure a breach within the time stated in a notice of breach. Any reference to specific breaches being material breaches within this Contract will not be construed to mean that other breaches are not material.

If the State terminates this Contract under this Section, the State will issue a termination notice specifying whether Contractor must: (a) cease performance immediately, or (b) continue to perform for a specified period. If it is later determined that Contractor was not in breach of the Contract, the termination will be deemed to have been a Termination for Convenience, effective as of the same date, and the rights and obligations of the parties will be limited to those provided in Section 24, Termination for Convenience.

The State will only pay for amounts due to Contractor for Contract Activities accepted by the State on or before the date of termination, subject to the State's right to set off any amounts owed by the Contractor for the State's reasonable costs in terminating this Contract. The Contractor must pay all reasonable costs incurred by the State in terminating this Contract for cause, including administrative costs, attorneys' fees, court costs, transition costs, and any costs the State incurs to procure the Contract Activities from other sources.

22. **Termination for Convenience.** The State may immediately terminate this Contract in whole or in part without penalty and for any reason, including but not limited to, appropriation or budget shortfalls. The termination notice will specify whether Contractor must: (a) cease performance of the Contract Activities immediately, or (b) continue to perform the Contract Activities in accordance with Section 23, Transition Responsibilities. If the State terminates this Contract for convenience, the State will pay all reasonable costs, as determined by the State, for State approved Transition Responsibilities.
23. **Transition Responsibilities.** Upon termination or expiration of this Contract for any reason, Contractor must, for a period of time specified by the State (not to exceed 90 calendar days), provide all reasonable transition assistance requested by the State, to allow for the expired or terminated portion of the Contract Activities to continue without interruption or adverse effect, and to facilitate the orderly transfer of such Contract Activities to the State or its designees. Such transition assistance may include, but is not limited to: (a) continuing to perform the Contract Activities at the established Contract rates; (b) taking all reasonable and necessary measures to transition performance of the work, including all applicable Contract Activities, training, equipment, software, leases, reports and other documentation, to the State or the State's designee; (c) taking all necessary and appropriate steps, or such other action as the State may direct, to preserve, maintain, protect, or return to the State all materials, data, property, and confidential information provided directly or indirectly to Contractor by any entity, agent, vendor, or employee of the State; (d) transferring title in and delivering to the State, at the State's discretion, all completed or partially completed deliverables prepared under this Contract as of the Contract termination date; and (e) preparing an accurate accounting from which the State and Contractor may reconcile all outstanding accounts (collectively, "Transition Responsibilities"). This Contract will automatically be extended through the end of the transition period.
24. **General Indemnification.** Contractor must defend, indemnify and hold the State, its departments, divisions, agencies, offices, commissions, officers, and employees harmless, without limitation, from and against any and all actions, claims, losses, liabilities, damages, costs, attorney fees, and expenses (including those required to establish the right to indemnification), arising out of or relating to: (a) any breach by Contractor (or any of Contractor's employees, agents, subcontractors, or by anyone else for whose acts any of them may be liable) of any of the promises, agreements, representations, warranties, or insurance requirements contained in this Contract; (b) any infringement, misappropriation, or other violation of any intellectual property right or other right of any third party; (c) any bodily injury, death, or damage to real or tangible personal property occurring wholly or in part due to action or inaction by Contractor (or any of Contractor's employees, agents, subcontractors, or by anyone else for whose acts any of them may be liable); and (d) any acts or omissions of Contractor (or any of Contractor's employees, agents, subcontractors, or by anyone else for whose acts any of them may be liable).

The State will notify Contractor in writing if indemnification is sought; however, failure to do so will not relieve Contractor, except to the extent that Contractor is materially prejudiced. Contractor must, to the satisfaction of the State, demonstrate its financial ability to carry out these obligations.

The State is entitled to: (i) regular updates on proceeding status; (ii) participate in the defense of the proceeding; (iii) employ its own counsel; and to (iv) retain control of the defense if the State deems necessary. Contractor will not, without the State's written consent (not to be unreasonably withheld), settle, compromise, or consent to the entry of any judgment in or otherwise seek to terminate any claim, action, or proceeding. To the extent that any State employee, official, or law may be involved or challenged, the State may, at its own expense, control the defense of that portion of the claim.

Any litigation activity on behalf of the State, or any of its subdivisions under this Section, must be coordinated with the Department of Attorney General. An attorney designated to represent the State may not do so until approved by the Michigan Attorney General and appointed as a Special Assistant Attorney General.

25. **Infringement Remedies.** If, in either party's opinion, any piece of equipment, software, commodity, or service supplied by Contractor or its subcontractors, or its operation, use or reproduction, is likely to become the subject of a copyright, patent, trademark, or trade secret infringement claim, Contractor must, at its expense: (a) procure for the State the right to continue using the equipment, software, commodity, or service, or if this option is not reasonably available to Contractor, (b) replace or modify the same so that it becomes non-infringing; or (c) accept its return by the State with appropriate credits to the State against Contractor's charges and reimburse the State for any losses or costs incurred as a consequence of the State ceasing its use and returning it.
26. **Limitation of Liability.** The State is not liable for consequential, incidental, indirect, or special damages, regardless of the nature of the action.
27. **Disclosure of Litigation, or Other Proceeding.** Contractor must notify the State within 14 calendar days of receiving notice of any litigation, investigation, arbitration, or other proceeding (collectively, "Proceeding") involving Contractor, a subcontractor, or an officer or director of Contractor or subcontractor, that arises during the term of the Contract, including: (a) a criminal Proceeding; (b) a parole or probation Proceeding; (c) a Proceeding under the Sarbanes-Oxley Act; (d) a civil Proceeding involving: (1) a claim that might reasonably be expected to adversely affect Contractor's viability or financial stability; or (2) a governmental or public entity's claim or written allegation of fraud; or (e) a Proceeding involving any license that Contractor is required to possess in order to perform under this Contract.
28. **State Data.** All data and information provided to Contractor by or on behalf of the State, and all data and information derived therefrom, is the exclusive property of the State ("State Data"); this definition is to be construed as broadly as possible. Upon request, Contractor must provide to the State, or a third party designated by the State, all State Data within 10 calendar days of the request and in the format requested by the State. Contractor will assume all costs incurred in compiling and supplying State Data. No State Data may be used for any marketing purposes.
29. **State Data.**
- a. **Ownership.** The State's data ("State Data," which will be treated by Contractor as Confidential Information) includes: (a) the State's data collected, used, processed, stored, or generated as the result of the Contract Activities; (b) personally identifiable information ("PII") collected, used, processed, stored, or generated as the result of the Contract Activities, including, without limitation, any information that identifies an individual, such as an individual's social security number or other government-issued identification number, date of birth, address, telephone number, biometric data, mother's maiden name, email address, credit card information, or an individual's name in combination with any other of the elements here listed; and, (c) personal health information ("PHI") collected, used, processed, stored, or generated as the result of the Contract Activities, which is defined under the Health Insurance Portability and Accountability Act (HIPAA) and its related rules and regulations. State Data is and will remain the sole and exclusive property of the State and all right, title, and interest in the same is reserved by the State. This Section survives the termination of this Contract.
 - b. **Contractor Use of State Data.** Contractor is provided a limited license to State Data for the sole and exclusive purpose of providing the Contract Activities, including a license to collect, process, store, generate, and display State Data only to the extent necessary in the provision of the Contract Activities. Contractor must: (a) keep and maintain State Data in strict confidence, using such degree of care as is appropriate and consistent with its obligations as further described in this Contract and applicable law to avoid unauthorized access, use, disclosure, or loss; (b) use and disclose State Data solely and exclusively for the purpose of providing the Contract Activities, such use and disclosure being in accordance with this Contract, any applicable Statement of Work, and applicable law; and (c) not use, sell, rent, transfer, distribute, or otherwise disclose or make available State Data for Contractor's own purposes or for the benefit of anyone other than the State without the State's prior written consent. This Section survives the termination of this Contract.
 - c. **Extraction of State Data.** Contractor must, within five (5) business days of the State's request, provide the State, without charge and without any conditions or contingencies whatsoever (including but not limited to the payment of any fees due to Contractor), an extract of the State Data in the format specified by the State.

- d. Backup and Recovery of State Data. Unless otherwise specified in Exhibit A, Contractor is responsible for maintaining a backup of State Data and for an orderly and timely recovery of such data. Unless otherwise described in Exhibit A, Contractor must maintain a contemporaneous backup of State Data that can be recovered within two (2) hours at any point in time.
 - e. Loss of Data. In the event of any act, error or omission, negligence, misconduct, or breach that compromises or is suspected to compromise the security, confidentiality, or integrity of State Data or the physical, technical, administrative, or organizational safeguards put in place by Contractor that relate to the protection of the security, confidentiality, or integrity of State Data, Contractor must, as applicable: (a) notify the State as soon as practicable but no later than twenty-four (24) hours of becoming aware of such occurrence; (b) cooperate with the State in investigating the occurrence, including making available all relevant records, logs, files, data reporting, and other materials required to comply with applicable law or as otherwise required by the State; (c) in the case of PII or PHI, at the State's sole election, (i) notify the affected individuals who comprise the PII or PHI as soon as practicable but no later than is required to comply with applicable law, or, in the absence of any legally required notification period, within 5 calendar days of the occurrence; or (ii) reimburse the State for any costs in notifying the affected individuals; (d) in the case of PII, provide third-party credit and identity monitoring services to each of the affected individuals who comprise the PII for the period required to comply with applicable law, or, in the absence of any legally required monitoring services, for no less than twenty-four (24) months following the date of notification to such individuals; (e) perform or take any other actions required to comply with applicable law as a result of the occurrence; (f) without limiting Contractor's obligations of indemnification as further described in this Contract, indemnify, defend, and hold harmless the State for any and all claims, including reasonable attorneys' fees, costs, and expenses incidental thereto, which may be suffered by, accrued against, charged to, or recoverable from the State in connection with the occurrence; (g) be responsible for recreating lost State Data in the manner and on the schedule set by the State without charge to the State; and, (h) provide to the State a detailed plan within 10 calendar days of the occurrence describing the measures Contractor will undertake to prevent a future occurrence. Notification to affected individuals, as described above, must comply with applicable law, be written in plain language, and contain, at a minimum: name and contact information of Contractor's representative; a description of the nature of the loss; a list of the types of data involved; the known or approximate date of the loss; how such loss may affect the affected individual; what steps Contractor has taken to protect the affected individual; what steps the affected individual can take to protect himself or herself; contact information for major credit card reporting agencies; and, information regarding the credit and identity monitoring services to be provided by Contractor. This Section survives the termination of this Contract.
30. **Non-Disclosure of Confidential Information.** The parties acknowledge that each party may be exposed to or acquire communication or data of the other party that is confidential, privileged communication not intended to be disclosed to third parties. The provisions of this Section survive the termination of this Contract.
- a. Meaning of Confidential Information. For the purposes of this Contract, the term "Confidential Information" means all information and documentation of a party that: (a) has been marked "confidential" or with words of similar meaning, at the time of disclosure by such party; (b) if disclosed orally or not marked "confidential" or with words of similar meaning, was subsequently summarized in writing by the disclosing party and marked "confidential" or with words of similar meaning; and, (c) should reasonably be recognized as confidential information of the disclosing party. The term "Confidential Information" does not include any information or documentation that was: (a) subject to disclosure under the Michigan Freedom of Information Act (FOIA); (b) already in the possession of the receiving party without an obligation of confidentiality; (c) developed independently by the receiving party, as demonstrated by the receiving party, without violating the disclosing party's proprietary rights; (d) obtained from a source other than the disclosing party without an obligation of confidentiality; or, (e) publicly available when received, or thereafter became publicly available (other than through any unauthorized disclosure by, through, or on behalf of, the receiving party). For purposes of this Contract, in all cases and for all matters, State Data is deemed to be Confidential Information.

- b. Obligation of Confidentiality. The parties agree to hold all Confidential Information in strict confidence and not to copy, reproduce, sell, transfer, or otherwise dispose of, give or disclose such Confidential Information to third parties other than employees, agents, or subcontractors of a party who have a need to know in connection with this Contract or to use such Confidential Information for any purposes whatsoever other than the performance of this Contract. The parties agree to advise and require their respective employees, agents, and subcontractors of their obligations to keep all Confidential Information confidential. Disclosure to a subcontractor is permissible where: (a) use of a subcontractor is authorized under this Contract; (b) the disclosure is necessary or otherwise naturally occurs in connection with work that is within the subcontractor's responsibilities; and (c) Contractor obligates the subcontractor in a written contract to maintain the State's Confidential Information in confidence. At the State's request, any employee of Contractor or any subcontractor may be required to execute a separate agreement to be bound by the provisions of this Section.
- c. Cooperation to Prevent Disclosure of Confidential Information. Each party must use its best efforts to assist the other party in identifying and preventing any unauthorized use or disclosure of any Confidential Information. Without limiting the foregoing, each party must advise the other party immediately in the event either party learns or has reason to believe that any person who has had access to Confidential Information has violated or intends to violate the terms of this Contract and each party will cooperate with the other party in seeking injunctive or other equitable relief against any such person.
- d. Remedies for Breach of Obligation of Confidentiality. Each party acknowledges that breach of its obligation of confidentiality may give rise to irreparable injury to the other party, which damage may be inadequately compensable in the form of monetary damages. Accordingly, a party may seek and obtain injunctive relief against the breach or threatened breach of the foregoing undertakings, in addition to any other legal remedies which may be available, to include, in the case of the State, at the sole election of the State, the immediate termination, without liability to the State, of this Contract or any Statement of Work corresponding to the breach or threatened breach.
- e. Surrender of Confidential Information upon Termination. Upon termination of this Contract or a Statement of Work, in whole or in part, each party must, within 5 calendar days from the date of termination, return to the other party any and all Confidential Information received from the other party, or created or received by a party on behalf of the other party, which are in such party's possession, custody, or control; provided, however, that Contractor must return State Data to the State following the timeframe and procedure described further in this Contract. Should Contractor or the State determine that the return of any non-State Data Confidential Information is not feasible, such party must destroy the non-State Data Confidential Information and must certify the same in writing within 5 calendar days from the date of termination to the other party.

31. Data Privacy and Information Security.

- a. Undertaking by Contractor. Without limiting Contractor's obligation of confidentiality as further described, Contractor is responsible for establishing and maintaining a data privacy and information security program, including physical, technical, administrative, and organizational safeguards, that is designed to: (a) ensure the security and confidentiality of the State Data; (b) protect against any anticipated threats or hazards to the security or integrity of the State Data; (c) protect against unauthorized disclosure, access to, or use of the State Data; (d) ensure the proper disposal of State Data; and (e) ensure that all employees, agents, and subcontractors of Contractor, if any, comply with all of the foregoing. In no case will the safeguards of Contractor's data privacy and information security program be less stringent than the safeguards used by the State, and Contractor must at all times comply with all applicable State IT policies and standards, which are available to Contractor upon request.
- b. Audit by Contractor. No less than annually, Contractor must conduct a comprehensive independent third-party audit of its data privacy and information security program and provide such audit findings to the State.
- c. Right of Audit by the State. Without limiting any other audit rights of the State, the State has the right to review Contractor's data privacy and information security program prior to the

commencement of Contract Activities and from time to time during the term of this Contract. During the providing of the Contract Activities, on an ongoing basis from time to time and without notice, the State, at its own expense, is entitled to perform, or to have performed, an on-site audit of Contractor's data privacy and information security program. In lieu of an on-site audit, upon request by the State, Contractor agrees to complete, within 45 calendar days of receipt, an audit questionnaire provided by the State regarding Contractor's data privacy and information security program.

- d. Audit Findings. Contractor must implement any required safeguards as identified by the State or by any audit of Contractor's data privacy and information security program.
- e. State's Right to Termination for Deficiencies. The State reserves the right, at its sole election, to immediately terminate this Contract or a Statement of Work without limitation and without liability if the State determines that Contractor fails or has failed to meet its obligations under this Section.

32. **Records Maintenance, Inspection, Examination, and Audit.** The State or its designee may audit Contractor to verify compliance with this Contract. Contractor must retain, and provide to the State or its designee and the auditor general upon request, all financial and accounting records related to the Contract through the term of the Contract and for 4 years after the latter of termination, expiration, or final payment under this Contract or any extension ("Audit Period"). If an audit, litigation, or other action involving the records is initiated before the end of the Audit Period, Contractor must retain the records until all issues are resolved.

Within 10 calendar days of providing notice, the State and its authorized representatives or designees have the right to enter and inspect Contractor's premises or any other places where Contract Activities are being performed, and examine, copy, and audit all records related to this Contract. Contractor must cooperate and provide reasonable assistance. If any financial errors are revealed, the amount in error must be reflected as a credit or debit on subsequent invoices until the amount is paid or refunded. Any remaining balance at the end of the Contract must be paid or refunded within 45 calendar days.

This Section applies to Contractor, any parent, affiliate, or subsidiary organization of Contractor, and any subcontractor that performs Contract Activities in connection with this Contract.

33. **Warranties and Representations.** Contractor represents and warrants: (a) Contractor is the owner or licensee of any Contract Activities that it licenses, sells, or develops and Contractor has the rights necessary to convey title, ownership rights, or licensed use; (b) all Contract Activities are delivered free from any security interest, lien, or encumbrance and will continue in that respect; (c) the Contract Activities will not infringe the patent, trademark, copyright, trade secret, or other proprietary rights of any third party; (d) Contractor must assign or otherwise transfer to the State or its designee any manufacturer's warranty for the Contract Activities; (e) the Contract Activities are merchantable and fit for the specific purposes identified in the Contract; (f) the Contract signatory has the authority to enter into this Contract; (g) all information furnished by Contractor in connection with the Contract fairly and accurately represents Contractor's business, properties, finances, and operations as of the dates covered by the information, and Contractor will inform the State of any material adverse changes; and (h) all information furnished and representations made in connection with the award of this Contract is true, accurate, and complete, and contains no false statements or omits any fact that would make the information misleading. A breach of this Section is considered a material breach of this Contract, which entitles the State to terminate this Contract under Section 21, Termination for Cause.

34. **Conflicts and Ethics.** Contractor will uphold high ethical standards and is prohibited from: (a) holding or acquiring an interest that would conflict with this Contract; (b) doing anything that creates an appearance of impropriety with respect to the award or performance of the Contract; (c) attempting to influence or appearing to influence any State employee by the direct or indirect offer of anything of value; or (d) paying or agreeing to pay any person, other than employees and consultants working for Contractor, any consideration contingent upon the award of the Contract. Contractor must immediately notify the State of any violation or potential violation of these standards. This Section applies to Contractor, any parent, affiliate, or subsidiary organization of Contractor, and any subcontractor that performs Contract Activities in connection with this Contract.

35. **Compliance with Laws.** Contractor must comply with all federal, state and local laws, rules and regulations.
36. **Nondiscrimination.** Under the Elliott-Larsen Civil Rights Act, 1976 PA 453, MCL 37.2101, *et seq.*, and the Persons with Disabilities Civil Rights Act, 1976 PA 220, MCL 37.1101, *et seq.*, Contractor and its subcontractors agree not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, height, weight, marital status, or mental or physical disability. Breach of this covenant is a material breach of this Contract.
37. **Unfair Labor Practice.** Under MCL 423.324, the State may void any Contract with a Contractor or subcontractor who appears on the Unfair Labor Practice register compiled under MCL 423.322.
38. **Governing Law.** This Contract is governed, construed, and enforced in accordance with Michigan law, excluding choice-of-law principles, and all claims relating to or arising out of this Contract are governed by Michigan law, excluding choice-of-law principles. Any dispute arising from this Contract must be resolved in Michigan Court of Claims. Contractor consents to venue in Ingham County, and waives any objections, such as lack of personal jurisdiction or *forum non conveniens*. Contractor must appoint agents in Michigan to receive service of process.
39. **Non-Exclusivity.** Nothing contained in this Contract is intended nor will be construed as creating any requirements contract with Contractor. This Contract does not restrict the State or its agencies from acquiring similar, equal, or like Contract Activities from other sources.
40. **Force Majeure.** Neither party will be in breach of this Contract because of any failure arising from any disaster or acts of god that are beyond their control and without their fault or negligence. Each party will use commercially reasonable efforts to resume performance. Contractor will not be relieved of a breach or delay caused by its subcontractors. If immediate performance is necessary to ensure public health and safety, the State may immediately contract with a third party.
41. **Dispute Resolution.** The parties will endeavor to resolve any Contract dispute in accordance with this provision. The dispute will be referred to the parties' respective Contract Administrators or Program Managers. Such referral must include a description of the issues and all supporting documentation. The parties must submit the dispute to a senior executive if unable to resolve the dispute within 15 business days. The parties will continue performing while a dispute is being resolved, unless the dispute precludes performance. A dispute involving payment does not preclude performance.
- Litigation to resolve the dispute will not be instituted until after the dispute has been elevated to the parties' senior executive and either concludes that resolution is unlikely, or fails to respond within 15 business days. The parties are not prohibited from instituting formal proceedings: (a) to avoid the expiration of statute of limitations period; (b) to preserve a superior position with respect to creditors; or (c) where a party makes a determination that a temporary restraining order or other injunctive relief is the only adequate remedy. This Section does not limit the State's right to terminate the Contract.
42. **Media Releases.** News releases (including promotional literature and commercial advertisements) pertaining to the Contract or project to which it relates must not be made without prior written State approval, and then only in accordance with the explicit written instructions of the State.
43. **Website Incorporation.** The State is not bound by any content on Contractor's website unless expressly incorporated directly into this Contract.
44. **Order of Precedence.** In the event of a conflict between the terms and conditions of the Contract, the exhibits, a purchase order, or an amendment, the order of precedence is: (a) the purchase order; (b) the amendment; (c) Exhibit A; (d) any other exhibits; and (e) the Contract.
45. **Severability.** If any part of this Contract is held invalid or unenforceable, by any court of competent jurisdiction, that part will be deemed deleted from this Contract and the severed part will be replaced by

agreed upon language that achieves the same or similar objectives. The remaining Contract will continue in full force and effect.

- 46. **Waiver.** Failure to enforce any provision of this Contract will not constitute a waiver.
- 47. **Survival.** The provisions of this Contract that impose continuing obligations, including warranties and representations, termination, transition, insurance coverage, indemnification, and confidentiality, will survive the expiration or termination of this Contract.
- 48. **Entire Contract and Modification.** This Contract is the entire agreement and replaces all previous agreements between the parties for the Contract Activities. This Contract may not be amended except by signed agreement between the parties (a "Contract Change Notice").

STATE OF MICHIGAN

Request For Proposal No. 641R5501009

MPSC/MDEQ EPA 111(d) Impact Analysis

EXHIBIT C PRICING

Payment will be made as follows:

- Completion of each task as identified in task timeline.
- Holdback of 10% shall be retained by the State of Michigan on the Final Report (\$49,100). Holdback payment will be made upon final acceptance.

Synapse Exhibit C: Pricing Summary

Salary & Wages, Fringes*

* Synapse's hourly billing rates are inclusive of salary, wages, fringes and any overhead.	Hourly rate*8	Total Days	Labor Costs by staff	Total
Jeremy Fisher	1600	28.25	\$45,200	
Patrick Luckow	1400	24.25	\$33,950	
Liz Stanton	1600	14.75	\$23,600	
Patrick Knight	1320	13.5	\$17,820	
Sarah Jackson	1400	8.75	\$12,250	
Nidhi Santen	1520	20.5	\$31,160	
Kenji Takahashi	1400	3.5	\$4,900	
Tommy Vitolo	1400	5	\$7,000	
Tyler Comings	1400	9.5	\$13,300	
Communications	640	9.5	\$6,080	
				\$195,260

Contractual Services

Subcontractor David White	1520	5	\$7,600	\$7,600
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Equipment

NA				
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Supplies & Materials

System Optimizer + Base Data	\$36,000			
IMPLAN for Michigan	\$1,000			
				\$37,000

Other

Travel (kickoff)	\$2,400			
Travel (closing)	\$3,600			
				\$6,000

Total Budget

\$245,860

STATE OF MICHIGAN

Request For Proposal No. 641R5501009

MPSC/MDEQ EPA 111(d) Impact Analysis

Synapse Proposal Development 111(d) State Plan for Michigan

Task Timelines

Key Dates

Task	10/1/2015	10/15/2015	10/29/2015	11/12/2015	11/26/2015	12/10/2015	12/24/2015	1/7/2016	1/21/2016	2/4/2016	2/18/2016	3/4/2016	3/18/2016	4/1/2016	4/15/2016	4/29/2016	5/13/2016	5/27/2016	6/10/2016	6/24/2016	7/8/2016	7/22/2016	8/5/2016	8/19/2016	9/2/2016	9/16/2016	9/30/2016	10/14/2016	10/28/2016	11/11/2016	11/25/2016	12/9/2016	12/23/2016	1/6/2017	1/20/2017	2/3/2017	2/17/2017	3/3/2017	3/17/2017	3/31/2017	4/14/2017	4/28/2017	5/12/2017	5/26/2017	6/9/2017	6/23/2017	7/7/2017	7/21/2017	8/4/2017	8/18/2017	9/1/2017	9/15/2017	9/29/2017	10/13/2017	10/27/2017	11/10/2017	11/24/2017	12/8/2017	12/22/2017	1/5/2018	1/19/2018	2/2/2018	2/16/2018	2/28/2018	3/13/2018	3/27/2018	4/10/2018	4/24/2018	5/8/2018	5/22/2018	6/5/2018	6/19/2018	7/3/2018	7/17/2018	7/31/2018	8/14/2018	8/28/2018	9/11/2018	9/25/2018	10/9/2018	10/23/2018	11/6/2018	11/20/2018	12/4/2018	12/18/2018	1/1/2019	1/15/2019	1/29/2019	2/12/2019	2/26/2019	3/12/2019	3/26/2019	4/9/2019	4/23/2019	5/7/2019	5/21/2019	6/4/2019	6/18/2019	7/2/2019	7/16/2019	7/30/2019	8/13/2019	8/27/2019	9/10/2019	9/24/2019	10/8/2019	10/22/2019	11/5/2019	11/19/2019	12/3/2019	12/17/2019	1/10/2020	1/24/2020	2/7/2020	2/21/2020	3/7/2020	3/21/2020	4/4/2020	4/18/2020	5/2/2020	5/16/2020	5/30/2020	6/13/2020	6/27/2020	7/11/2020	7/25/2020	8/8/2020	8/22/2020	9/5/2020	9/19/2020	10/3/2020	10/17/2020	10/31/2020	11/14/2020	11/28/2020	12/12/2020	12/26/2020	1/9/2021	1/23/2021	2/6/2021	2/20/2021	3/6/2021	3/20/2021	4/3/2021	4/17/2021	4/30/2021	5/14/2021	5/28/2021	6/11/2021	6/25/2021	7/9/2021	7/23/2021	8/6/2021	8/20/2021	9/3/2021	9/17/2021	9/30/2021	10/14/2021	10/28/2021	11/11/2021	11/25/2021	12/9/2021	12/23/2021	1/6/2022	1/20/2022	2/3/2022	2/17/2022	2/28/2022	3/13/2022	3/27/2022	4/10/2022	4/24/2022	5/8/2022	5/22/2022	6/5/2022	6/19/2022	7/3/2022	7/17/2022	7/31/2022	8/14/2022	8/28/2022	9/11/2022	9/25/2022	10/9/2022	10/23/2022	11/6/2022	11/20/2022	12/4/2022	12/18/2022	1/1/2023	1/15/2023	1/29/2023	2/12/2023	2/26/2023	3/12/2023	3/26/2023	4/9/2023	4/23/2023	5/7/2023	5/21/2023	6/4/2023	6/18/2023	7/2/2023	7/16/2023	7/30/2023	8/13/2023	8/27/2023	9/10/2023	9/24/2023	10/8/2023	10/22/2023	11/5/2023	11/19/2023	12/3/2023	12/17/2023	1/10/2024	1/24/2024	2/7/2024	2/21/2024	3/7/2024	3/21/2024	4/4/2024	4/18/2024	5/2/2024	5/16/2024	5/30/2024	6/13/2024	6/27/2024	7/11/2024	7/25/2024	8/8/2024	8/22/2024	9/5/2024	9/19/2024	10/3/2024	10/17/2024	10/31/2024	11/14/2024	11/28/2024	12/12/2024	12/26/2024	1/9/2025	1/23/2025	2/6/2025	2/20/2025	3/6/2025	3/20/2025	4/3/2025	4/17/2025	4/30/2025	5/14/2025	5/28/2025	6/11/2025	6/25/2025	7/9/2025	7/23/2025	8/6/2025	8/20/2025	9/3/2025	9/17/2025	9/30/2025	10/14/2025	10/28/2025	11/11/2025	11/25/2025	12/9/2025	12/23/2025	1/6/2026	1/20/2026	2/3/2026	2/17/2026	2/28/2026	3/13/2026	3/27/2026	4/10/2026	4/24/2026	5/8/2026	5/22/2026	6/5/2026	6/19/2026	7/3/2026	7/17/2026	7/31/2026	8/14/2026	8/28/2026	9/11/2026	9/25/2026	10/9/2026	10/23/2026	11/6/2026	11/20/2026	12/4/2026	12/18/2026	1/1/2027	1/15/2027	1/29/2027	2/12/2027	2/26/2027	3/12/2027	3/26/2027	4/9/2027	4/23/2027	5/7/2027	5/21/2027	6/4/2027	6/18/2027	7/2/2027	7/16/2027	7/30/2027	8/13/2027	8/27/2027	9/10/2027	9/24/2027	10/8/2027	10/22/2027	11/5/2027	11/19/2027	12/3/2027	12/17/2027	1/10/2028	1/24/2028	2/7/2028	2/21/2028	3/7/2028	3/21/2028	4/4/2028	4/18/2028	5/2/2028	5/16/2028	5/30/2028	6/13/2028	6/27/2028	7/11/2028	7/25/2028	8/8/2028	8/22/2028	9/5/2028	9/19/2028	10/3/2028	10/17/2028	10/31/2028	11/14/2028	11/28/2028	12/12/2028	12/26/2028	1/9/2029	1/23/2029	2/6/2029	2/20/2029	3/6/2029	3/20/2029	4/3/2029	4/17/2029	4/30/2029	5/14/2029	5/28/2029	6/11/2029	6/25/2029	7/9/2029	7/23/2029	8/6/2029	8/20/2029	9/3/2029	9/17/2029	9/30/2029	10/14/2029	10/28/2029	11/11/2029	11/25/2029	12/9/2029	12/23/2029	1/6/2030	1/20/2030	2/3/2030	2/17/2030	2/28/2030	3/13/2030	3/27/2030	4/10/2030	4/24/2030	5/8/2030	5/22/2030	6/5/2030	6/19/2030	7/3/2030	7/17/2030	7/31/2030	8/14/2030	8/28/2030	9/11/2030	9/25/2030	10/9/2030	10/23/2030	11/6/2030	11/20/2030	12/4/2030	12/18/2030	1/1/2031	1/15/2031	1/29/2031	2/12/2031	2/26/2031	3/12/2031	3/26/2031	4/9/2031	4/23/2031	5/7/2031	5/21/2031	6/4/2031	6/18/2031	7/2/2031	7/16/2031	7/30/2031	8/13/2031	8/27/2031	9/10/2031	9/24/2031	10/8/2031	10/22/2031	11/5/2031	11/19/2031	12/3/2031	12/17/2031	1/10/2032	1/24/2032	2/7/2032	2/21/2032	3/7/2032	3/21/2032	4/4/2032	4/18/2032	5/2/2032	5/16/2032	5/30/2032	6/13/2032	6/27/2032	7/11/2032	7/25/2032	8/8/2032	8/22/2032	9/5/2032	9/19/2032	10/3/2032	10/17/2032	10/31/2032	11/14/2032	11/28/2032	12/12/2032	12/26/2032	1/9/2033	1/23/2033	2/6/2033	2/20/2033	3/6/2033	3/20/2033	4/3/2033	4/17/2033	4/30/2033	5/14/2033	5/28/2033	6/11/2033	6/25/2033	7/9/2033	7/23/2033	8/6/2033	8/20/2033	9/3/2033	9/17/2033	9/30/2033	10/14/2033	10/28/2033	11/11/2033	11/25/2033	12/9/2033	12/23/2033	1/6/2034	1/20/2034	2/3/2034	2/17/2034	2/28/2034	3/13/2034	3/27/2034	4/10/2034	4/24/2034	5/8/2034	5/22/2034	6/5/2034	6/19/2034	7/3/2034	7/17/2034	7/31/2034	8/14/2034	8/28/2034	9/11/2034	9/25/2034	10/9/2034	10/23/2034	11/6/2034	11/20/2034	12/4/2034	12/18/2034	1/1/2035	1/15/2035	1/29/2035	2/12/2035	2/26/2035	3/12/2035	3/26/2035	4/9/2035	4/23/2035	5/7/2035	5/21/2035	6/4/2035	6/18/2035	7/2/2035	7/16/2035	7/30/2035	8/13/2035	8/27/2035	9/10/2035	9/24/2035	10/8/2035	10/22/2035	11/5/2035	11/19/2035	12/3/2035	12/17/2035	1/10/2036	1/24/2036	2/7/2036	2/21/2036	3/7/2036	3/21/2036	4/4/2036	4/18/2036	5/2/2036	5/16/2036	5/30/2036	6/13/2036	6/27/2036	7/11/2036	7/25/2036	8/8/2036	8/22/2036	9/5/2036	9/19/2036	10/3/2036	10/17/2036	10/31/2036	11/14/2036	11/28/2036	12/12/2036	12/26/2036	1/9/2037	1/23/2037	2/6/2037	2/20/2037	3/6/2037	3/20/2037	4/3/2037	4/17/2037	4/30/2037	5/14/2037	5/28/2037	6/11/2037	6/25/2037	7/9/2037	7/23/2037	8/6/2037	8/20/2037	9/3/2037	9/17/2037	9/30/2037	10/14/2037	10/28/2037	11/11/2037	11/25/2037	12/9/2037	12/23/2037	1/6/2038	1/20/2038	2/3/2038	2/17/2038	2/28/2038	3/13/2038	3/27/2038	4/10/2038	4/24/2038	5/8/2038	5/22/2038	6/5/2038	6/19/2038	7/3/2038	7/17/2038	7/31/2038	8/14/2038	8/28/2038	9/11/2038	9/25/2038	10/9/2038	10/23/2038	11/6/2038	11/20/2038	12/4/2038	12/18/2038	1/1/2039	1/15/2039	1/29/2039	2/12/2039	2/26/2039	3/12/2039	3/26/2039	4/9/2039	4/23/2039	5/7/2039	5/21/2039	6/4/2039	6/18/2039	7/2/2039	7/16/2039	7/30/2039	8/13/2039	8/27/2039	9/10/2039	9/24/2039	10/8/2039	10/22/2039	11/5/2039	11/19/2039	12/3/2039	12/17/2039	1/10/2040	1/24/2040	2/7/2040	2/21/2040	3/7/2040	3/21/2040	4/4/2040	4/18/2040	5/2/2040	5/16/2040	5/30/2040	6/13/2040	6/27/2040	7/11/2040	7/25/2040	8/8/2040	8/22/2040	9/5/2040	9/19/2040	10/3/2040	10/17/2040	10/31/2040	11/14/2040	11/28/2040	12/12/2040	12/26/2040	1/9/2041	1/23/2041	2/6/2041	2/20/2041	3/6/2041	3/20/2041	4/3/2041	4/17/2041	4/30/2041	5/14/2041	5/28/2041	6/11/2041	6/25/2041	7/9/2041	7/23/2041	8/6/2041	8/20/2041	9/3/2041	9/17/2041	9/30/2041	10/14/2041	10/28/2041	11/11/2041	11/25/2041	12/9/2041	12/23/2041	1/6/2042	1/20/2042	2/3/2042	2/17/2042	2/28/2042	3/13/2042	3/27/2042	4/10/2042	4/24/2042	5/8/2042	5/22/2042	6/5/2042	6/19/2042	7/3/2042	7/17/2042	7/31/2042	8/14/2042	8/28/2042	9/11/2042	9/25/2042	10/9/2042	10/23/2042	11/6/2042	11/20/2042	12/4/2042	12/18/2042	1/1/2043	1/15/2043	1/29/2043	2/12/2043	2/26/2043	3/12/2043	3/26/2043	4/9/2043	4/23/2043	5/7/2043	5/21/2043	6/4/2043	6/18/2043	7/2/2043	7/16/2043	7/30/2043	8/13/2043	8/27/2043	9/10/2043	9/24/2043	10/8/2043	10/22/2043	11/5/2043	11/19/2043	12/3/2043	12/17/2043	1/10/2044	1/24/2044	2/7/2044	2/21/2044	3/7/2044	3/21/2044	4/4/2044	4/18/2044	5/2/2044	5/16/2044	5/30/2044	6/13/2044	6/27/2044	7/11/2044	7/25/2044	8/8/2044	8/22/2044	9/5/2044	9/19/2044	10/3/2044	10/17/2044	10/31/2044	11/14/2044	11/28/2044	12/12/2044	12/26/2044	1/9/2045	1/23/2045	2/6/2045	2/20/2045	3/6/2045	3/20/2045	4/3/2045	4/17/2045	4/30/2045	5/14/2045	5/28/2045	6/11/2045	6/25/2045	7/9/2045	7/23/2045	8/6/2045	8/20/2045	9/3/2045	9/17/2045	9/30/2045	10/14/2045	10/28/2045	11/11/2045	11/25/2045	12/9/2045	12/23/2045	1/6/2046	1/20/2046	2/3/2046	2/17/2046	2/28/2046	3/13/2046	3/27/2046	4/10/2046	4/24/2046	5/8/2046	5/22/2046	6/5/2046	6/19/2046	7/3/2046	7/17/2046	7/31/2046	8/14/2046	8/28/2046	9/11/2046	9/25/2046	10/9/2046	10/23/2046	11/6/2046	11/20/2046	12/4/2046	12/18/2046	1/1/2047	1/15/2047	1/29/2047	2/12/2047	2/26/2047	3/12/2047	3/26/2047	4/9/2047	4/23/2047	5/7/2047	5/21/2047	6/4/2047	6/18/2047	7/2/2047	7/16/2047	7/30/2047	8/13/2047	8/27/2047	9/10/2047	9/24/2047	10/8/2047	10/22/2047	11/5/2047	11/19/2047	12/3/2047	12/17/2047	1/10/2048	1/24/2048	2/7/2048	2/21/2048	3/7/2048	3/21/2048	4/4/2048	4/18/2048	5/2/2048	5/16/2048	5/30/2048	6/13/2048	6/27/2048	7/11/2048	7/25/2048	8/8/2048	8/22/2048	9/5/2048	9/19/2048	10/3/2048	10/17/2048	10/31/2048	11/14/2048	11/28/2048	12/12/2048	12/26/2048	1/9/2049	1/
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Request For Proposal No. 641R5501009

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